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SYNOPSIS OF
PSYCHOSOMATIC
DIAGNOSIS AND TREATMENT

SYNOPSIS OF PSYCHOSOMATIC DIAGNOSIS AND TREATMENT

By

FLANDERS DUNBAR, M.D.

With the Assistance of

Jacob Arlow, M.D.	Sydney Rubin, M.D.
Raymond Hussey, M.D.	E. Schneider, M.D.
Bertram Lewin, M.D.	Lester W. Sontag, M.D.
Robert C. Lowe, M.D.	

and

Members of the Staff of the Departments
of Medicine and Psychiatry
Columbia-Presbyterian Medical Center, New York City

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PREFACE

The general practitioner often finds himself in a kind of no man's land. His charts are inadequate, and there are few directions on the signposts of recent research. Such signposts as there are have been so widely scattered that he is usually too busy to look for them. Many of his patients present problems he is unable to solve even with the aid of his colleagues or textbooks.

This synopsis is intended to be a guidebook in newer methods of diagnosis and treatment, especially those applicable to the large percentage of patients who present the physician with baffling problems or who do not respond satisfactorily to the methods he has already learned.

An attempt has been made to follow Osler's outline with the addition of new material to the sections concerning differential diagnosis and therapy. At present this purpose cannot be achieved completely, but much is known which can be applied readily in such a way as to prevent illness, misdiagnosis, and recurrences or relapses in chronic disease.

The specialist interested in one or more sections in this volume will gain perspective in the application of this material if he gives particular attention to the introductory and concluding chapters.

Many of the practical suggestions here given are the outgrowth of a study of serial admissions to the wards and clinics of the Columbia-Presbyterian Medical Center with which Dr. Jacob Arlow, Dr. Robert C. Lowe, Dr. Sydney Rubin, and Dr. E. Schneider assisted. Dr. Arlow, who is a certified psychiatrist, was especially interested in the application of psychoanalytic techniques to psychosomatic problems; Dr. Lowe, who is now assistant professor of medicine at the University of Oklahoma, was particularly interested in metabolic disturbances; Dr. Rubin, a practicing psychoanalyst now associated with the Menninger Clinic, was especially interested in neurological and gastrointestinal problems; Dr. Schneider, who is now completing his training in this field, was a general practitioner specializing in dermatology.

This study was carried out under the direction of Dr. Nolan D. C. Lewis, professor of psychiatry, Columbia University, with the cooperation of the chiefs of other services. Although Doctors Arlow, Lowe, Rubin, and Schneider have drawn on their earlier and later experience, as has the author, in writing their signed chapters, we are grateful to Dr. Lewis for his careful reading of all the material here presented.

The author wishes to express appreciation for the chapters contributed by Doctors Hussey, Lewin, and Sontag—each a specialist in his own field, and therefore in a position to present psychosomatic implications against the background of long experience. Doctors Brickner, Coleman, Fisher, Hooker, and Miller deserve special recognition because of their willingness to allow the use of unpublished material based on research not complete. Although their observations are not definitive, they help to outline some blank areas in our knowledge and provide clues which may be useful to others who may wish to do pioneer work.

Among the many who have assisted in the preparation of this manuscript, I should like to mention Alexander Beller, Grace Bergh, and Katherine Hansson who was of major assistance in editing and proofreading.

New York F. D.

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SYNOPSIS OF
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SYNOPSIS OF PSYCHOSOMATIC DIAGNOSIS AND TREATMENT

INTRODUCTION

> "Psychosomatic medicine is that part of medicine which is concerned with an appraisal of both the emotional and the physical mechanisms involved in the disease processes of the individual patient with particular emphasis on the influence that these two factors exert on each other and on the individual as a whole."—Osler, *The Principles and Practice of Medicine.*

Less than two decades ago the term psychosomatic was essentially unknown, and to physicians and laymen alike who heard it, it had an esoteric meaning. In 1942, the first chapter of Christian's (14th) edition of Osler's *Principles and Practice of Medicine* was devoted to "Psychosomatic Medicine." In the 1947 revision a discussion of psychosomatic medicine was made part of the introduction, followed by a chapter on functional diseases of the nervous system which continued and extended the 1942 change in the traditional chapter on epidemics and contagious diseases. Carr, in his introduction, comments on the changing concepts during the last fifty years relative to epidemic and epidemiological diseases. Similar changes have been taking place in our concepts concerning the psychosomatic approach to medical problems. Before the term psychosomatic crept into Christian's revision of Osler's *Medicine,* the journal, *Psychosomatic Medicine: Experimental and Clinical Studies,* was inaugurated.

Physicians throughout the country today are seeking training in psychosomatic medicine. What has happened during a period of ten to fifteen years to bring *about the appearance of a new term and the change in the status of the word from something esoteric, understood only by a few, to a label for a field of training which most physicians demand today and an understanding of which most patients now demand from their physicians?*

It may be well to admit at the outset that for two or three decades, physicians have been severly hampered by their inability to cope with illnesses that could not be studied, diagnosed, and cured through the use of the microscope or by bacteriologic or chemotherapic means. Patients who could not be treated by these means were becoming disillusioned with their physicians. From the point of view of the physician, understanding psychosomatic diagnosis and treatment represents a widening of his horizon and an increase in his effectiveness. From the point of view of the patient, finding a physician willing to listen to him, as well as to look at his blood and his urine under a microscope brings renewed confidence.

During World War II while civilians and their physicians were searching for and demanding new medical techniques, physicians in the Armed Forces were discovering that 60 to 80 per cent of their casualties resulted from diseases that could not be diagnosed or cured on the basis of the medicine that they had learned. For example: Brigadier General Cooke, a layman who served with an Army committee of experts to investigate psychoneuroses, in a recently published book, *All But Me and Thee,* comments in his first chapter:

> "Secret weapons did not cause the only surprise in World War II . . . Over a given period of time more men were getting out of the Army than were sent across the Pacific to fight the Japs. It is small wonder then that the Chief of Staff wanted to be informed immediately, how such a thing could come about. Well, he and the rest of the staff soon found out. An unknown menace was knocking at our door; something new had arisen, a thing called psychoneurosis. The word alone hit us with the unexpectedness of Mr. Schickelgruber's dingbats and caused just as much dismay, even more so, in fact, because Hitler's bombs were self-explanatory, but who knew what a neurosis was or where it came from."

In the second chapter the author describes the attitude of some high-ranking officers:

> "We questioned Jimmy-The-Hard whose outfit was rated one of the best. 'Are you trying to tell me how to run my division?' he shouted when I pointed out the large number of casualties charged to his organization. 'Of course I got rid of those weaklings. How do you think I'm going to fight a war with people like that? This is a man's outfit.' 'The trouble is, General,' I said, 'the hospitals are getting so full of psychoneurotics that pretty soon we won't have room for anybody else.' "

The magnitude of the problem was indicated by the statistics of one Army hospital.

> "Out of more than three thousand cases entering this hospital, we have returned about seven hundred to duty. Ten have been turned over to the Veterans' Administration, five have been released to the custody of their parents, and about two hundred have been sent to other hospitals for specialized treatment . . . The other thousand were discharged for physical disability." And of this figure, "About 20 per cent have had overseas service, but less than half of that number have been in combat of any sort." *

In this instance 50 per cent of the hospitalized soldiers were discharged because they were unable to adjust themselves to army life. Furthermore the Army records indicated that a great percentage of those returned to duty one way or another became again disabled. From 20 to 30 per cent of all the casualties were psychiatric cases, and probably an equal percentage of cases occurred where psychosomatic aspects were of significance. For every straight psychoneurosis discharge there was one physical disability which might be more exactly called a discharge due to psychoneurosis. In other words, figures for psychoneurosis discharges need to be doubled for informative statistics.

While the Armed Forces were making observations such as these, the press discovered psychosomatic medicine. For example, two years ago when the word *psychosomatic* appeared in popular magazine articles, it was written in italics. In parentheses directly after it would be some quip about the polysyllabic word, or the "sixty-four dollar word." Next would follow an explanation. About two years ago the quips disappeared, but the italics and explanations remained. Recently in several popular articles, psychosomatic medicine was mentioned in ordinary print, with no italics, no clever quips, no explanations. Apparently, the term has become a part of the layman's vocabulary. A prominent representative of the press with long experience in scientific reporting stated that: "After this has happened, doctors, try as they will, cannot change the word."

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* Cooke, E. D.: *All But Me and Thee,* Washington, D. C., 1946, Infantry Journal Press.

During the same period some physicians were attempting "to find another word for it," and others were attempting to learn about it. The pressure in the direction of experimental investigation became so great that those who were looking for a new word were left on the sidelines, like the old mandarin:

While the old Mandarin
Was trying to make up his mind
How to describe a dogwood flower
The dogwood season was over.

Physicians today need not sit like the old mandarin waiting for the perfect expression. "To communicate to another is to learn what it is we intend, for language is not only a medium, but a resultant as well."* Terms should be based on reporting of data, not on philosophical discussions of theory or words.

Today more and more physicians are exchanging with one another their observations of facts, mistakes, and successes. Physicians are individualists, lords of their own offices; they have gained a scientific impetus from the necessity of pooling knowledge during the world crisis.

Physicians who have done experimental investigation have been severely hampered: if they were in the armed services, by being unable to publish; if they were in civilian practice, by lack of facilities to carry out their problems to a scientifically acceptable conclusion.

Origin and Definition of the Term Psychosomatic

Recently physicians, compelled by their patients and, to some extent, by their own experience (accentuated by medical problems with which they have had to cope during World War II), have become curious about the origin of the term *psychosomatic* and about its definition. Until two or three years ago the psychosomatic approach to clinical and research problems was a hobby in which some of their confreres indulged. Suddenly the practicing physician found one or many of his patients expecting him to be familiar with this new field. And most general practitioners have become aware of their inability to cope with the majority of problems presented to them by their patients.

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* Richards, I. A.: *The Philosophy of Rhetoric: The Mary Flexner Lectures at Bryn Mawr for 1936*, New York, 1937, Oxford University Press.

The adjective, psychosomatic, has crept into medical literature during a transition phase in medical practice, medical science, and public health developments. In the late 19th century physicians who had been converted from witch doctor techniques to the use of objective scientific methods were beginning to realize that there were some illness syndromes which could not be adequately diagnosed and treated from the point of view of laboratory techniques alone. The ideal of the family doctor and the "bedside manner" helped for a while to bridge the gap, but it became apparent that more precise techniques were needed in order to evaluate environmental and personality factors in the majority of illness syndromes encountered, especially in the chronic diseases. For a decade or more, attention was focused on "treating the patient as a whole." This was a phrase comforting to both patient and physician but neither one knew exactly what it meant.

Some of the earliest concrete suggestions concerning the patient as a whole came from Freud, who began his medical career as a neurologist and physiologist. In 1893[8] he published an article on hysteria and attempted to develop new techniques for dealing with problems which had both physiological and psychological components. Shortly thereafter, Groddeck,[10, 11] in Baden-Boden, and Hollos and Ferenczi,[7, 13] in Budapest, became particularly interested in the effect of psychological factors on the diagnosis and course of several different illness syndromes well-known to the general practitioner. Gradually the adjective *psychosomatische* crept into German literature. Between the second and third decades of the 20th century, Felix Deutsch[1] attempted to define the meaning of *psychosomatische Medizin.*

In the meantime, Brill, the translator of many of Freud's early works, had introduced the United States to Freud. Slightly later, against this background, Smith Ely Jelliffe[14,15] became interested in the application of psychoanalysis to general medical problems. In the late 1920's, George Draper,[2] who had studied problems of constitution with the Italian school, under the direction of Viola, tried to introduce the word *psysome* to emphasize the fact that body and mind could be treated as one. So far as the author is aware, the first English use of the adjective *psychosomatic* is by Dunbar.* A more precise definition of the psychosomatic approach to medical problems is to be found in Dunbar.[3] Since that time, there have been many definitions, all representing attempts to avoid a dichotomy between mind and body. One such definition is quoted at the outset of this chapter, from Christian's edition of Osler's *Principles and Practice of Medicine.* A more careful definition appears in the Editorial Note introducing the first issue of *Psychosomatic Medicine,* 1939:

> "Psychic and somatic phenomena take place in the same biological system and are probably two aspects of the same process."

A slightly later version which combines the different emphases of the many physicians who have been working on this problem during the last decade is the following:

> "The criterion of psychosomatic health is maintenance by the organism of homeostatic equilibrium within itself and within its environmental field."—Dunbar[4]

This definition brings together both the physiological and the psychological approach, because psychosomatic study of illness must of necessity include a combination of both techniques.

Developments in Psychosomatic Research

Applications of the psychosomatic approach to present-day problems have been studied quietly by some physicians over a period of the last ten years. The demand for further enlightenment has been emphasized during the recent world crisis. In Great Britain, *The Peckham Experiment* was published under the title of, *A Study of the Living Structure in Society*.[18] On page 13 of this monograph appears the statement:

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* Mental Hygiene, 18:16-25, 1934; Am. J. Psych., 91:541, 1934.

1. Those in whom disorder was accompanied by dis-*ease*— 32%
2. Those in whom disorder was masked by compensation, and who therefore appeared in a state of "well-being"— 59%
3. Those in whom neither disease, disorder, nor disability was detected—the "healthy"— 9%

This statement implies that 9 per cent of those seeking medical advice were "healthy," but the word appears in quotation marks. Nine per cent under a system requiring an annual check-up are "healthy"; how much more significant would the percentage be were those who refuse to see the doctor included. Studies such as this indicate the popular demand for better medical care. While physicians are trying to become educated in this field, patients are demanding more knowledge from their physicians. The real pressure comes neither from the patient nor from the physician, but from society. The answer to society's challenge varies in different cultures, but the challenge is there.

The physician is beginning to realize that in the diagnosis and treatment of any illness, it is essential to include both physiological and psychological diagnostic methods against the background of the cultural environmental group with which the patient is struggling: in other words, the living structure of the patient's own society. There is much discussion about whether ulcer is more frequent in males or in females. This syndrome appears more frequent in males in one type of cultural environment and more frequent in females in another type of cultural environment. For example. J. L. Halliday[12] writes:

> "It is interesting that since 1900 the rate of ulcer in male vs. female has become 12-1. There [also] has been a similar change in the relation of coronary disease. If the changes in the illnesses to which male and female seem to be more

> susceptible are to be understood, it is necessary to evaluate the radical change in the cultural pressures since the beginning of this century."

The statement made by Halliday has its application in syndromes other than peptic ulcer, as he himself has noted. For example, fifteen years ago the decade of major incidence for hypertensive cardiovascular disease and coronary disease was forty to fifty. In a study of serial admissions at Presbyterian Hospital[5] for sufferers of cardiovascular disease this statistical determination of the decade of major incidence was borne out. A few cases of coronary occlusion were encountered in their early thirties, but only a few. During World War II, there was a marked rise in deaths from coronary occlusion or incapacity from hypertensive cardiovascular disease in the decade twenty to thirty. In other words, the age of major incidence of cardiovascular disease appeared to have shifted down during World War II. Physicians today are interested in discovering why.

In a recent study, Spitz[19] discussed the change in frequency of disease syndromes and states:

> "I took as starting point the enormous decrease in the incidence of traumatic neuroses in this war as compared with the last. I concluded from this decrease that the soldier of today has increased resistance to psychic trauma. Since this resistance . . . is a function of the Ego, it becomes necessary to investigate in what manner the Ego has changed in the course of one generation. Such an Ego-change could only be the result of a modification of environmental factors during childhood and adolescence, the years in which the Ego is developed and established. It could be proved that such a change in the dynamics of the environment had actually taken place. The change consisted in a more liberal attitude on the part of parents and in a decrease in over-protection of children, which went hand in hand with a habituation to the minor traumas of sports and games."

Dunn[6] cited statistics that "soldier's heart" was the most prevalent psychosomatic disorder of World War I. It appears that in this war, the incidence of "soldier's heart" decreased significantly. The decrease is surprising in view of the predisposing conditions in this war.

Spitz observes:

> "It appears that in the present war this condition has become a comparatively insignificant problem of military medicine.

This finding is very surprising, particularly when we consider the fact that the somatic factors which one would expect to be responsible for a condition like soldier's heart, are infinitely more severe in this war than in the last. The effort furnished by the individual soldier in action is a very much greater one. Similarly, the anxiety and consequently the tachycardia-provoking experiences in this war appear to be infinitely worse than in the last war, whether they involve dive bombers, mines, tank attacks, heavy artillery, torpedo, flame-throwers, or the suspense when confronted with the expectation of all this.

". . . The decrease in the incidence of 'soldier's heart' becomes still more surprising when we learn that the cases of gastrointestinal diseases, ranging from dyspepsia to peptic ulcer, have *increased* thirty-six fold from the last war to this one, in which they represent up to 36 per cent of all cases under treatment . . ."

Spitz raises the question of whether there could be an accompanying change in the ego structure.

Experience during the last five years has led to the conclusion that (1) more people are needed who are equipped to observe patients from two angles—physiological and psychological—, and (2) more team work is needed among groups in the medical field, that is, physicians and those who are technically adequate in the allied fields and who know how to pool the results of their separate observations.

Recent research, by physicians applying the psychosomatic approach, has made steady inroads toward the solution of many disease problems. While essential links are still missing, in some syndromes much has been accomplished toward the clarification of a specific constellation. This is especially true in certain types of cardiovascular, gastrointestinal diseases, fractures, rheumatic disease, asthma, and diabetes. In other syndromes such as urticaria, hayfever, and functional hypoglycemia for example, elements have been found to indicate that they, too, will fit a specific constellation.

It is obvious that many psychosomatic investigations of the past five years were oriented toward finding out whether or not patients with "organic" disease have emotional problems. In skin, endocrines, metabolism, and muscular-skeletal disorders, the emphasis is still focused on settling the question of psychogenesis. However, in dermatology and endocrinology, attempts to correlate physiological status with emotional specificity have been made with some success.

In other fields, notably urology and opthalmology, there is very little to report.*

Persons suffering from a given illness syndrome resemble one another more than they resemble any one suffering from a different syndrome or diagnosed as completely healthy—"discharged with no demonstrable signs of organic disease." The use of the personality profile, an important research method increasingly applied within the last ten years, as a basis for diagnosis and treatment in the Armed Forces, industrial medicine, and in research, has brought about significant advances in the discovery and elucidation of psychosomatic syndromes.

Much more is known today than even five years ago about the psychophysiology of visceral diseases which some physicians used to call the psychosomatic diseases. It is significant that until recently little attention was paid to syndromes involving the central nervous system and the so-called voluntary musculature from the point of view of psychophysiology.

There have been conferences on arthritis by diverse medical organizations, and good papers are appearing on the subject of the psychophysiology of tuberculosis and other infectious or contagious diseases. Even the Parkinsonian syndrome is being studied in this way. The earlier concept that unconscious factors could play a role in dysfunction only by way of the involuntary nervous system and viscera and that the mechanism for symptom production in those parts of the body more directly under cortical control must be purely psycho, that is, hysterical, is outmoded.

Any psychological disturbance discovered in relation to infectious and certain types of organic disease was supposed to be a secondary neurotic reaction to the disease with no dynamic relationship to the syndrome itself beyond that of possible interference with adequate response to therapy. This was believed in spite of the fact that earlier experimenters with hypnosis had been able to produce and cure illness pictures such as warts and herpes (usually attributed to a virus), as well as changes in glutination reactions implying changes in the patient's relative susceptibility or resistance to infection.

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* Schneider, E.: Personal communication.

Although we are still uncertain as to what virus, microorganism, allergen, or metabolic disturbance is involved in rheumatic fever or arthritis, we have learned that sufferers from these illnesses are of a more or less well-defined personality (not merely constitutional) type.

While some were making observations along these lines, others trained in the study of experimental production of neurosis in animals* were observing the psychophysiology of the conditioned reflex behavior in animals. Practicing physicians were slow in applying such observation to conditioned reflex behavior in human beings because it was thought that human beings were an entirely different type of animal. It was permissible to use clues obtained from animals in studying the reaction of capillaries to acetylcholine, but physicians have been slow in admitting that social and environmental situations can produce many disturbing types of conditioned reflexes in human beings.

Of course, knowledge gained from animal experiments cannot be applied directly to slightly more complicated organisms, but clues can be and have been obtained from them as to the simpler psychophysiological mechanisms.

Probably one reason for many people's love of dogs is that certain fundamental behavior patterns which exist in themselves and their children are more clearly seen in pets—dogs, cats, or pigs. It is perhaps significant that many children prefer a living animal to treat as a baby rather than a doll. Many children learn what behavior in them will make a pet sick, angry, or even neurotic. A doll can be smashed or thrown out the window and Daddy will fix it or buy another. There is evidence to the effect that children who have had contacts with animals as a part of their preparental play become better parents than those who have had only a symbolic play with dolls. The reason for this is that the children have had an opportunity to observe directly the psychophysiological effects of their behavior on a less highly developed organism. One may add that many children thereby gain the basis for a psychosomatic approach to their own illnesses and those of their children.

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* Liddell,[16] Gantt,[9] Masserman.[17]

Physicians well-acquainted with animal experimental and physiological research have a better understanding of a disease process in a sick patient and are less likely to attempt to cure by way of our old formulas—Rx. seconal, or snap out of it. As a matter of fact, the only reason that recourse was taken to such prescriptions was that the mechanics of the disease process were not understood. Some used to behave like the Mad Duchess:

> I speak crossly to my boy and beat him when he sneezes
> For he can thoroughly enjoy the pepper when he pleases.

And if the beating does not do any good they keep him from being a nuisance by sedation. When physicians couldn't make a patient snap out of it or give sedation, they took recourse to cutting away nerve pathways.

Another way of interrupting disagreeable physiological and behavioral responses is sympathectomy or lobotomy. The Smithwick operation is frequently recommended for recalcitrant patients with hypertension. The initial result, provided there are not too many complications, is a marked drop in blood pressure. But often there are complications, and even though the patient has been deprived of some of the pathways for innervation, he frequently manages to develop hypertension by some other pathway or some substitute visceral tension. Frontal lobotomy also decreases the number of nervous pathways available to the patient, but patients who have sustained a relief of symptoms by this means usually find others.

In the last five years physicians have come to realize that results obtained by cutting neural pathways should be more carefully evaluated. Changes in environment and methods of observation in medical care of the Armed Forces have supplied information which was previously lacking. Similar changes in the experiences of the civilian population have resulted in a different approach to sufferers from chronic illness manifesting itself in every organ system. Evidence indicates that many of these patients are, to echo Keats, half in love with death. The actual quotation is "half in love with easeful death." They choose slow death that gives them some affection and some revenge in the process of dying, rather than an accident or a suicide which would deprive them of this satisfaction. Physically not an easeful death, emotionally it has its compensations. Physicians treating such patients should be prepared for recurrences and other symptoms in the major disease process.

SUMMARY

1. During the last five years physicians have learned that there are psychophysiological interrelationships, not only in the visceral diseases, but in the nervous and infectious diseases as well.

a. The same or other psychodynamic principles previously studied in visceral diseases underlie the syndromes involving voluntary musculature and reactions to reactions.

2. Disturbances in behavior and reactions to treatment once thought to be a consequence of the disease process itself have been found to have a dynamic relation to the disease.

3. Recent experiences have demonstrated that mechanisms involved are often quite different from the early concepts of hysterical conversion.

4. Each type of disease syndrome is probably characterized by a specific type of personality profile.

5. Attempts to interrupt the disease process by destroying part of the organism, though sometimes immediately effective, are often followed by symptoms different from those originally treated by this technique.

A discussion of the method of history-taking, a vital and integral part of the study of the personality profile, will be found in another chapter.* It should be mentioned, however, that the psychosomatic approach, which attempts to study the whole organism, must take into careful account the myriad events in the patient's life history.

PSYCHODYNAMIC SUMMARY

Any book dealing with the psychosomatic approach to medical problems should make reference to recent research dealing with psychoneuroses. This fact resulted in a request to Dr. Lewin to provide a brief introductory statement on this subject. He writes as follows:

"Even in so well intentioned a book as Osler's 14th edition, the position of the neuroses among the other illnesses is anomalous and discordant with the general plan of the classification and assumptions. They are distinct from the other illnesses since their etiology is not physical; there is no trauma, no germ, no chemical agent or deficiency, which, taken as a central primary point is the cause of all the manifestations of the disease. The body, in the neuroses, also behaves unphysiologically. It does not, as in the 'organic' diseases react logically and rationally to the presence of a primary, central stimulus, so that all the disease symptoms are readily understandable as logical consequences of this reaction to the primary focus. The autopsy shows no convincing lesions, the microscope reveals nothing very significant, the chemical changes are trivial, secondary or unconvincing. It is true that the reader of the conventional textbooks will find many diseases ticketed with the phrase 'etiology unknown,' but the implication is, nevertheless, the words 'as yet' are understood.

"The causes of the neuroses are by no means unknown. They are merely different. The neuroses are known to be brought about by a different set of circumstances from the germ diseases, the endocrine disorders and the deficiency diseases. The causative factors were discovered by a different method, the method of psychological investigation known as psychoanalysis and appear to be different in nature from the physical agents of the so-called 'purely' organic illness. Conceding as much to the possibility of constitutional background, but no more than for any other type of illness, the neurotic is ill because of what he has lived through, either as an adult or as a child. He suffers, says Freud, from reminiscences; and one might add, from a most unusual sort of reminiscence, for ordinarily it is unconscious, repressed, and not available to the patient's recall. In the simplest psychoneuroses, with the recovery of the memory the neurosis disappears, if the repression is removed through proper psychological means. In the more complicated neuroses, this is not enough, for other factors, due to variations in the person's ego, make for various complications. But in principle, the causative factor of all neuroses has a similar basis.

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* See Treatment Chapter, pp. 430-432.

"What psychosomatic medicine does is to turn the methods of psychological medicine to use on the hitherto so-called purely organic illnesses. It subtracts nothing; it adds to the techniques of anatomic, chemical and physical research, and anatomic and physiologic clinical investigation. Its hope is that it may contribute to a dynamic understanding of illness syndromes, so that much which has been obscurely glimpsed behind the vague concepts of constitution, individual idiosyncrasy, and 'resistance' to illness may be given more concrete shape. Psychosomatic medicine requires a paragraph under the account of each illness which would state that certain definite psychological facts are important to the illness, either as central or as contributing causes, in large or small measure explanatory of the manifestations known as symptoms."

Physicians, even witch doctors, have been aware of the need for more concrete information about bodily changes which accompany diverse emotional states. Each specialist has approached the problem from his own angle and following his own lines of research has come so close to the others that they can almost exchange ideas. The succeeding chapters in this volume will present diverse approaches to diagnosis and treatment of the illness syndromes which constitute the major problems confronting the public health officers or the practicing physician in this generation.

PART I

CHAPTER I

INTRODUCTORY: EMBRYOLOGY AND CHRONOLOGY

Many physicians who have given time to observation of the chronology and accompanying behavioral disorders of organic dysfunction have asked why the occurrence of infantile colic predisposes the gastrointestinal system to later dysfunction. Why does infantile colic occur? In terms of our present knowledge it seems that illness patterns which have a background in infancy differ from those in which the major injury occurs in later life. Some students in this field have asked what happens to the fetus in utero. Dr. Hooker[*] of the University of Pittsburgh who has made the most complete studies of early embryonic and fetal behavior gives the following facts:

FACTORS THAT MAY MODIFY THE RESULTS:

Progressive anoxemia: interruption of placental circulation.

Maternal anesthesia:

Eliminate fetal activity—Barbiturates, amytal, nembutal; avertin.

Alter fetal activity —Morphine
Ether
Nitrous oxide

No apparent effect —Novocaine, spinal or local
Atropine
Ephedrine

Physical factors:

Release of intrauterine pressures.
Breakdown of temperature control.
Physical insult of premature birth or operation.

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[*] Psychosom, Med. 4:199-205, April, 1942, and in a personal communication.

Counter-measures:

Oxygen to placenta; limitations.

Drugs counteracting anesthesia—Picrotoxin, esp. barbiturates.
Coramine (?)

Temperature control of fluid or of bed.

METHOD OF STIMULATION. 10, 25, 50, 100 mg., 2 and 5 gms.

RECORDING

Motion pictures.
Dictated notes.

AGE DETERMINATION—Streeter, Boyd.

SEQUENCE OF APPEARANCE OF FUNCTION.

Circulatory System—Heart beat begins about 5th week, M.A. (Menstrual age)

Neuromuscular system—6 weeks, M.A. or earlier (electrical). Seven and one-half weeks, M.A., tactile reflexes.

Urinary system—10 weeks, M.A., or earlier, mesonephros, then metanephros.

Gastrointestinal system—peristalsis at 11 weeks, M.A. Meconium first at 16 weeks, M.A. Defecation first at 16 weeks, M.A., but abnormal, probably.

Endocrine system—very variable and uncertain.

Thyroid has colloid by 10 weeks, M.A.
Thymus probably nonfunctional before birth.
Hypophysis has eosinophilic cells by 12 weeks, M.A.
Adrenal cortical secretion probable at 8½ weeks, M.A.
Gonadal function doubtful before birth.
Islets of Langerhans, no data.

Reproductive system—probably nonfunctional until long after birth.

TENTATIVE AND INCOMPLETE SCHEDULE OF SEQUENCE OF HUMAN FETAL ACTIVITY ACCORDING TO MENSTRUAL AGE AS SEEN IN PITTSBURGH STUDIES.

SIX WEEKS

Reflexogenous areas: none.
Characteristic responses: none.
Type of responses: inactive.
Sequence summary: inactive.

SEVEN WEEKS

Reflexogenous areas: none.
Characteristic responses: none.
Type of responses: inactive.
Sequence summary: inactive.

SEVEN AND A HALF TO EIGHT WEEKS

Reflexogenous areas: V 2.
Characteristic responses: Lateral neck flexion, with little arm participation.
Type of responses: Stereotyped, occasional response.
Sequence summary: Total pattern only.

EIGHT AND A HALF WEEKS

Reflexogenous areas: Primary: V 2.
Secondary: V 3.
Tertiary: neck area (seen in two)—direct?
Characteristic responses: Lateral flexion trunk and neck, slight rump rotation, bilateral arm extension.
Type of responses: Stereotyped, fairly active over short period.
Sequence summary: Total pattern only.

NINE TO NINE AND A HALF WEEKS

(Eyelids forming and nearly or quite complete.)
Reflexogenous areas: V 2 and especially, V 3.
Characteristic responses: Lateral flexion trunk and neck, marked rump rotation, bilateral arm extension.
Type of responses: Stereotyped, fairly active.
Sequence summary: Expanded total pattern; vestibular responses, proprioceptive response; *spontaneous movements.*

TEN TO TEN AND A HALF WEEKS

Reflexogenous areas: Primary: V 2 and V 3.
Secondary: V 1 for eyelids, in oldest.
Tertiary: Palms and soles in oldest.
Characteristic responses: Responses like 9½ weeks; partial finger closure, independent arm extension and plantar toe flexion in oldest.

Type of responses: More or less stereotyped, modifiable, active.

Sequence summary: Total pattern beginning to be modified.

ELEVEN WEEKS

Reflexogenous areas: Primary: V 2 and V 3.
Secondary: Palms, eyelids (V 1).
Tertiary: Arms and forearms, soles.

Characteristic responses: Extension combining with or substituted for lateral flexion of trunk and neck, sometimes segmental in nature, with thigh rotation, with or without arm extension — medial rotation; partial finger closure, with or without pollex; (contraction of orbicularis oculi; contraction of corrugator; plantar flexion of toes; forearm pronation).

Type of responses: More or less stereotyped, modifiable, active.

Sequence summary: Modified total pattern with appearance of some specific reflexes.

ELEVEN AND A HALF WEEKS

Reflexogenous areas: Entire face, ventral neck, upper chest, upper extremity, lower extremity.

Characteristic responses: Lateral flexion-extension or extension of trunk and neck, medial rotation arms so palms approach, extension of thighs and knees; head rotation; arm abduction; wrist or forearm flexion; partial digital closure; foot sole reflex with flexion of thigh and knee.

Type of responses: Quite mechanical, very active.

Sequence summary: Modified total pattern, many specific reflexes, first typical foot sole response.

TWELVE TO TWELVE AND A HALF WEEKS

Reflexogenous areas: Entire face, ventral neck, upper chest, upper and lower extremities.

Characteristic responses: Trunk and neck extension, with or without one or more of a wide variety of movements at nearly all joints; typical Babinski; digital closure still incomplete; eyeball moved downward in two; deglutition following lip stimulation; M. orbicularis oculi contraction to V 3 stimulation.

Type of responses: Quite mechanical, very active.

Sequence summary: Fading total pattern, numerous specific reflexes.

THIRTEEN WEEKS

Reflexogenous areas: Almost entire surface of body except sides, back and top of head.

Characteristic responses: Extension - lateral flexion of trunk and neck sometimes exhibited; wide variety of movements at practically all joints; thumb opposition.

Type of responses: Somewhat mechanical, very active.

Sequence summary: Specific reflexes predominate, but total pattern occasionally exhibited.

THIRTEEN AND A HALF WEEKS

Reflexogenous areas: Almost entire surface of body except back and top of head.

Characteristic responses: Wide variety of movements at every joint in the body; occasional extension or extension-lateral flexion of trunk and neck; very intricate combination of specific reflexes; lip closure; complete finger closure; crossed reflexes.

Type of responses: Mechanical character largely disappeared; may be graceful and flowing; extremely active.

Sequence summary: Specific reflexes predominate and are combining into complicated movements; total pattern incidental.

FOURTEEN WEEKS

Reflexogenous areas: Entire body, except back and top of head.

Characteristic responses: Wide repertoire of specific reflexes throughout entire body; maintained finger closure; tongue responses; eyelid contraction to V 2 stimulation.

Type of responses: Graceful, flowing, not mechanical in any sense, extremely active.

Sequence summary: Almost all reflexes of neonate, except respiration, grasping, suctorial reflex, tendon reflexes and use of voice, are represented; total pattern practically gone.

(From this point, the designated age includes the next half week.)

FIFTEEN WEEKS

Reflexogenous areas: Entire body, except back and top of head.

Characteristic responses: Specific responses in combination; abdominal reflex, beginning grasp.

Type of responses: More vigorous, indicating maturation; very active.

Sequence summary: Grasping reflex present in weak form; maturation of reflexes already present.

Note: Full urinary bladder found at 15½ weeks (#58).

SIXTEEN WEEKS

Reflexogenous areas: Entire body, except back and top of head.

Characteristic responses: All types hitherto seen exhibited.

Type of responses: Sluggish and not particularly active.

Sequence summary: Beginning of more inactive response period, with increased threshold which persists until fetus may be resuscitated.

SEVENTEEN WEEKS

Reflexogenous areas: As heretofore.

Characteristic responses: As heretofore, with addition of protrusion of upper lip on its stimulation, that of lower lip causing mouth closure. Beginning grasp, feeble:

Type of responses: Sluggish.

Sequence summary: Expansion of lip responses; maturation of all previously existing reflexes.

EIGHTEEN WEEKS

(Eyelids becoming separated.)

Reflexogenous areas: Heretofore stated.

Characteristic responses: As heretofore, with addition of earliest observed chest contractions and effective grasp at 16½, thumb not necessarily involved.

Type of responses: Sluggish.

Sequence summary: Beginning of respiratory chest contractions; maturation of all previously existing reflexes.

NINETEEN WEEKS

Insufficient data.

TWENTY WEEKS

Reflexogenous areas: As heretofore.

Characteristic responses: As heretofore, with both lips protruded on stimulation.

Type of responses: Sluggish.

Sequence summary: Maturation of all previously existing reflexes.

TWENTY-ONE WEEKS

(Eyelids separated.)

Reflexogenous areas: As heretofore.

Characteristic responses: As heretofore, with protrusion of both lips on their stimulation.

Type of responses: Slugglish.

Sequence summary: Continued maturation.

TWENTY-TWO WEEKS

Reflexogenous areas: As heretofore.

Characteristic responses: As heretofore, with addition of temporary respiration and use of voice (cry); definite appearance of lip pursing and protrusion when glass rod was placed between.

Type of responses: Sluggish, except when respiring.

Sequence summary: Brief but effective respiration, cry, grasp, and definite suctorial response.

TWENTY-THREE WEEKS

Reflexogenous areas: As heretofore.

Characteristic responses: As heretofore, with addition of respiration over half-hour period after resuscitation.

Type of responses: Sluggish, except when respiring.

Sequence summary: First self-sustained respiration, for longer than a few seconds.

TWENTY-FOUR WEEKS

Reflexogenous areas: As heretofore.

Characteristic responses: As heretofore; longest self-sustained respiration after resuscitation, 3½ hours.

Type of responses: Sluggish, except when respiring.

Sequence summary: Maturation of respiration, especially.

TWENTY-FIVE WEEKS

Reflexogenous areas: As heretofore.

Characteristic responses: As heretofore; Moro reflex; tendon reflexes secured after resuscitation; urination; longest self-sustained respiration after resuscitation in this group, 26½ hours; eyes opened and closed, and move laterally in unison.

Type of response: Sluggish, except when resuscitated, then very active.

Sequence summary: Quite sustained respiration, tendon reflexes, Moro reflex.

TWENTY-SIX WEEKS

No data.

TWENTY-SEVEN WEEKS

Reflexogenous areas: As heretofore.

Characteristic responses: As heretofore; active grasp of sufficient strength to practically support own weight momentarily with one hand; pollex actively flexed in grasp; one fetus viable.

Type of responses: Very active when breathing, otherwise sluggish.

Sequence summary: Effective grasp; first viability in this series.

TWENTY-EIGHT WEEKS

No data.

TWENTY-NINE WEEKS

Reflexogenous areas: As heretofore.

Characteristic responses: As heretofore; audible suctorial response.

Type of responses: Active when respiring.

Sequence summary: Effective suctorial response, increasing probability of viability.

THIRTY WEEKS

Nothing new.
Reflexogenous areas: As heretofore.
Characteristic responses: As heretofore.
Type of responses: As heretofore.
Sequence summary: As heretofore.

THIRTY-ONE WEEKS

Nothing new.

THIRTY-TWO WEEKS

Reflexogenous areas: As heretofore.
Characteristic responses: As heretofore, with definite cremasteric reflex in one.

Type of responses: Active when respiring.
Sequence summary: Cremasteric reflex, viability in most.

THIRTY-THREE WEEKS

Reflexogenous areas: As heretofore.
Characteristic responses: As heretofore, lower lip stimulation caused mouth opening and searching of lower lip with tongue.

Type of responses: Active when respiring.
Sequence summary: Tongue searching.

THIRTY-FOUR TO FORTY-FIVE WEEKS

Nothing new.

It would appear that trauma to a pregnant mother may or may not affect the fetus depending on her own reaction to the trauma, and perhaps also to the developmental level of the fetus at the time the trauma occurs. There is evidence to the effect that illnesses of those organ systems required to assume a new function at the moment of birth, for example, respiratory and digestive illnesses, are more difficult to cure than those involving organ systems which are subject to a less traumatic change from intrauterine to extrauterine environment. Attention should be called to the emphasis in Hooker's outline on the nature and type of reflex responses which may be elicited during intrauterine life. Illness is essentially a response, conditioned or unconditioned, to a stimulus. The physician may often obtain clues about particularly stubborn symptoms if he reviews the developmental and functional history of the parts involved.

Although the purpose of this book was to add a section on psychosomatic diagnosis and treatment to each chapter of Christian's revision of Osler's textbook, it has seemed desirable to depart from Osler's order of discussion of different organ systems to include Dr. Hooker's observations on the chronology of intrauterine development.

CHAPTER II

DETERMINANTS OF PREDISPOSITION TO PSYCHOSOMATIC DYSFUNCTION AND DISEASE

PROBLEM OF PRONENESS TO PSYCHOSOMATIC DISORDER

L. W. SONTAG, M.D.*

One of the most fascinating aspects of psychosomatic medicine and its practice is the difference between individuals in the degree of, nature of, and duration of the expression of frustrations, fears, and anxieties through disturbances of function of various organs of the body. The wards full of military personnel in Army hospitals during World War II emphasize dramatically this difference between individuals in their emotional and physiological responses to stress. Psychosomatic disturbances represented a large proportion of Army casualties, and while vast differences existed in the experience of soldiers, these differences in experience did not by any means account for the variations in their proneness to the development of disturbances of physiological function, or to state it more concisely, in their somatizing of emotions. Soldiers serving side by side in advance outposts under battle conditions in some instances developed noninfectious diarrheas; in others, symptoms of circulatory collapse; and in still others, symptoms, sometimes roentgenologically confirmed, of peptic ulcer. Many such dysfunctions continued for long periods of time after the men had been relieved and placed in Army hospitals. Other soldiers serving under the same conditions and as members of the same units, while they suffered disturbances of physiological function, experienced these disturbances only during actual combat and were ready to take their places on the battle line after short periods of rest. These differences in somatization of emotions may be described as: (1) Differences between individuals in the severity of the anxiety-producing situation necessary to cause distressing somatic symptoms. (2) Differences in the duration of symptoms from acute anxiety-producing situations. (3) Differences in the ease with which actual organic lesions resulting from organic dysfunction are produced. Some individuals may exhibit ulcer symptoms without demonstrable changes in the anatomy of the gastrointestinal tract, while others develop actual peptic ulcers which can be demonstrated roentgenologically. (4) Differences in the organ systems through which disturbances of emotions are preponderantly expressed.

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* Fels Research Institute for the Study of Human Development, Yellow Springs, Ohio.

These same individual differences in predisposition to psychosomatic disorder and in the election of a particular response are, of course, seen only slightly less dramatically in the everyday practice of medicine. There is perhaps no person who is immune to the development of physiologic dysfunction from psychic causes, provided the inciting situation is severe enough and prolonged enough. Likewise, there is no individual who will not express anxiety or frustration through every system of his body; yet the function of one particular system will probably be much more greatly disturbed than will that of others. The physician who feels acutely a responsibility for his patients, or the businessman who is suffering from fear and anxiety for the survival of his business, may experience a stomach dysfunction or an elevation in blood pressure as a predominant somatic symptom. These same anxieties, however, may be expressed to a lesser degree through some elevation of pulse rate, an exaggerated peristalsis of the intestine and colon, or through excessive perspiration. Somatization of emotions is a universal phenomenon but it occurs with individual differences in organ emphasis, in duration of symptoms from any acute episode of emotion, and in anatomic damage resulting from physiological dysfunction.

There are many factors that presumably might contribute to such differences in the somatization of emotions. While it is impossible to appraise the importance of each and to assign to it a given weight of responsibility for differences in somatic disturbance, it is, nevertheless, important to consider what such factors might be. They can, perhaps, be divided into two groups, although such a division may be, to a degree, arbitrary. The first of these can be called its constitution, but constitution in a broad sense. It includes: (1) The inherited pattern of physiological function as well as anatomical structure. (2) The modification of this physiological function pattern, particularly during the periods of growth and maturation when suboptimal nutrition and other factors may limit the degree to which the genetic potentials of an individual can be realized. An excellent and very common example of a situation in which an inherited characteristic is modified is, of course, the child who carries in his genes the biochemical potentials to grow to a height of six feet, but who because of a suboptimal nutrition reaches an adult height several inches less than his six-foot potential. (3) The physiological state of an individual's body at the time of the development of an anxiety or stress situation. An example of this factor is the hypotension of malnourished individuals who, in a normal state of vigor and without a nutritionally induced decreased vascular tension, might express anxiety in the form of a benign essential hypertension.

There is another group of factors that probably influence the nature and extent of the somatization of the anxiety of an individual which might be labeled "life experience." Under it one might list:

1. The meaningfulness of a given stress situation in terms of the sense of insecurity, or guilt, or frustration which it has for that particular individual. To one who has been reared in a highly religious environment with an overly rigid code of sex behavior and its importance, the development of an extramarital love

affair might produce a sense of guilt of such proportions as to be productive of a peptic ulcer. The same love affair to another without such background might not be an anxiety-producing situation at all.

2. The development of a conditioned response, or what might be termed "habit" learned in infancy or childhood, of the expression of an anxiety through certain physiological channels. It is possible that the child who, during the life period when the homeostasis of the lower gastrointestinal system is still in an immature stage has expressed his anxiety through a noninfectious diarrhea, may continue to do so in later life.

3. The nature and severity of the anxiety-producing situation itself over and above the particular importance which the individual, as a result of life experience, assigns to it. This statement implies a continuum in the matter of somatic expressions of emotions, that any individual may develop any lesion or dysfunction if the inciting incident is of sufficient severity and duration.

Since the life experience of an individual and the modification of genetically determined potentials does not begin at birth but rather at conception, I shall discuss first the fetal environmental factors which may to some degree be determinants of the constitution and therefore of the nature and severity of the somatization of emotions during childhood or adult life. Unfortunately, the period of fetal life is one about which relatively little is known as compared with other periods. We do not know the fetal age at which various endocrine systems begin to function, nor to what degree the maternal and fetal endocrine systems supplement each other, although it is recognized that at least in part mother and child behave physiologically as a single organism. We know that many substances pass the human placental barrier from maternal to fetal circulation; yet, there is doubt about the ability of other substances to pass that barrier. It has been demonstrated[50] that the fetus is capable of perceiving certain outside stimuli, such as sounds, yet the exact intensity or pitch of a sound which can be perceived is not known. Because of fragmentary and imperfect knowledge, a discussion of the role of fetal environment in modifying the constitution of an individual in terms of physiological function at a later age must be treated cautiously, if not with a great deal of temerity. To omit such a discussion, however, would be to neglect the consideration of possibilities which may have a major importance; therefore, the subject is presented here, but with careful avoidance of dogmatic statements which might imply a greater knowledge of causal relationship than exists.

Fetal Environment

1. **Available Oxygen.**—Fetal environment is largely constituted of the various physiological processes of the embryonic host which determine blood levels of many essential constituents of life and growth, among these, oxygen. Oxygenation of the fetal tissues may differ considerably in individuals, and these differences may be due to many causes. The site of the placenta as it is implanted on the uterine wall is a matter of some importance in determining the level of gaseous interchange between the maternal and the fetal circulations. The uterine wall is not equally vascular in all its parts. If the placenta is implanted in a relatively vascular area, oxygen, as well as other substances available to the fetus from the mother's circulation, is present in greater quantity than when the placenta is implanted on a less vascular area. The size of the placenta has been shown[20] to bear a relationship to the size of the fetus, thus implying that oxygen, as well as the various food elements, is available in greater abundance when the placenta is larger. Disturbances in maternal physiology, such as preeclamptic toxemia and glomerulonephritis, are known to cause thrombosis of a part of the vascular system of the placenta and later a fibrosis, destroying in many instances a third or more of the capacity of the placenta for interchange of nutrient materials and waste products. Certainly the fetus responds to some factor in toxemia, perhaps oxygen deprivation, by a violently increased activity level.[51] Barcroft[22] has

described a similar period of irritation in sheep fetuses when the oxygen-carbon dioxide interchange is interrupted. This marked increase in activity during toxemia is also very comparable to that reported by Preyer[42] in severe hemorrhage of the mother. The effects of a pre-eclamptic or nephritic toxemia are apparent at birth in the small size of the infant and usually in its poor vitality and hydration. Mothers suffering from valvular heart disease or other conditions impairing cardiac output and their ability to oxygenate their own tissues have a lowered blood oxygen tension which in turn reduces the oxygen available for the fetus. Whether such conditions as hypotension have a similar though lesser effect is a subject for speculation. Fetal anemias of the erythroblastosis fetalis type reduce drastically the oxygen-carrying capacity of the fetal blood and produce a severe state of fetal anoxia.

From his experiments on sheep Barcroft[22] has pointed out that fetal oxygen tension throughout the greater part of pregnancy is markedly lower than that which exists in postnatal life. To just what degree this oxygen tension may be lowered even further through such environmental or fetal physiological factors as have been mentioned previously, it is impossible to state. In view of the fact that all of the brain cells are formed during the first few weeks of life and that myelinization of the nerve tracts continues throughout fetal life, it seems reasonable to believe that an adverse modification of environment in the form of a less adequate oxygen supply for metabolism and growth of the fetus during this period should produce changes of a permanent nature. Such changes could perhaps modify the behavior pattern of the individual and various aspects of the function of his nervous system and other organs. The problem-behavior and suboptimum growth progress in children born of mothers suffering from severe pre-eclamptic toxemia and nephritis have often been observed. Children who have suffered from fetal anemias often have markedly deviant behavior patterns. The somatic manifestations of stress situations in later years might also be different from what they might have been had this fetal environment factor of oxygenation been undisturbed.

Such toxic products as are capable of passing the placental membranes into the fetal circulation or which reduce the oxygen-carrying capacity of the mother's blood must be considered as a part of fetal environment. Mosher[38] has found that mapharsen, quinine, or sodium salicylate when fed or injected into experimental pregnant animals produces hemorrhages in the labyrinth of the fetus without producing similar hemorrhages in the mother. Taylor[60] has reported an increased incidence of congenital deafness in the offspring of mothers who, during the malarial season, were heavy users of quinine. Such findings suggest the importance upon the metabolism and growth of fetal structures of drugs taken in large doses by the mother. Whether such drugs as the sulfonamides are capable of permanently modifying the characteristics of brain and nervous system cells during their period of embryonic development has not been established. These drugs depend for their antibacterial action upon interference with the metabolism of the living cell through rendering ineffective one or more of the enzymes of the cell. Disturbances of the mental processes and other toxic effects of these drugs are the result of lesser disturbances in the metabolic processes of the brain cells themselves. Such effects upon mature brain cells are transitory although they often persist for some time after the discontinuation of the drug. Whether such drugs entering the fetal circulation for a short time during the period of actual formation and growth of the brain cells are as transitory in their effects is a matter for conjecture. However, embryonic cells are in general much more vulnerable than are mature cells, and interruptions or alterations of metabolic processes even for a few days might permanently modify the characteristics of fetal brain cells. If so, both the stage of embryonic life during which they were given plus the duration of the therapy might be the determining factors as to their permanent importance.

It is essential, of course, to recognize the difference between a modification of function within normal limits and the production of a definite abnormality.

An individual might have the genetic potential for an I. Q. of 120, which, of course, is within normal range. Yet, it is conceivable that as a result of an adverse prenatal environment or even such a common postnatal occurrence as carbon monoxide poisoning, he might have an I. Q. of only 110, which is also normal. We are concerned, then, with the adverse modification of a characteristic having a gene-determined potential, but which because of a particular environment is not realized. Certain drugs may, therefore, have adverse effects on developing embryonic nervous system cells, effects that produce a different physiological pattern in later years, yet one which must be considered normal in terms of group expectancy.

2. **The Endocrines.**—The endocrine system of a pregnant woman must be considered as a part of the fetal environment. While it is not definitely known that all of the products of the human endocrine glands are capable of passing the uninjured placental barrier, many are known to do so, and it seems probable that all of them do so. The mammary glands of newborn infants of both sexes show enlargement at birth and many secrete transiently. It is probable that this phenomenon is the result of maternal hormonal stimulation. Pseudohermaphrodism in lower animals may be produced by the injection of large doses of testosterone during pregnancy.[30] Freemartins in cattle are examples of the interaction of male and female sex hormones. Damage to maternal endocrine glands may impose an unusual stress on the developing glands of the fetus. In pregnancies complicated by diabetes, Heilberg[32] found a marked increase in the number of islands of Langerhans in the fetal pancreases. Gray and Feemster[29] found the insulin content of the pancreases in fetuses of diabetic mothers twenty-four times as high as that in the mothers' pancreases. Gordon[28] and others have reported an improvement in diabetic mothers during pregnancy presumably due to the passage of fetal insulin into the maternal circulation. In such cases the newborn infants usually develop a marked hypoglycemia as a result of the compensatory hyperfunction of their pancreases. Sontag and Munson,[52] Teel,[61] and others have shown that by the

introduction of large doses of Evans' growth hormone into the circulation of pregnant rats, it is possible to produce rat fetuses which are larger than control animals. Patterson, Hunt, and Nicodemus[40] and others have demonstrated that in patients with low thyroid function, the secretion of the fetal thyroid gland supplements to a degree the product from the maternal thyroid. Patterson[41] and others believe that some congenital goiters are the result of maternal absorption of fetal thyroxin production when the mother has an inadequately functioning thyroid. The evidence on this subject is as yet inadequate to justify any positive statement as to what effect hypo- or hyperthyroidism of the mother during the gestation period will have on the thyroid economy of a child. The growth patterns as well as the behavior patterns of infants of hypothyroid mothers show differences from those of infants of normal mothers. Certainly the activity of the mother's and the child's thyroid glands, as well as that of their pancreases, must be considered as an indivisible unit. A disturbance of glandular function on either the maternal or fetal side may produce changes which are permanent in the physiological function of the individual. Here again the state of growth and maturation at which this endocrinologic disturbance occurs is of paramount importance in determining the constitution of the individual. An adult may, through surgery or irradiation, become hypothyroid for a period of a few months, but when a thyroid supplement is supplied, normal function is likely to be regained. The cretinous child of one year of age will, however, never acquire the nervous system function lost as a result of his twelve months' thyroid deprivation, even though the supplement is continued throughout his life. The activating processes of the thyroid hormone on the enzyme systems of his developing brain cells are essential continuously throughout the period of growth if optimum brain function is to be attained for the balance of his life. While too little is known of the effects of maternal endocrine function on the nature of the developing constitution of the individual and his later pattern of physiological function, enough is known to indicate strongly its importance.

3. **Nutrition.**—The nutrition of the fetus, occurring as it does during the period when all of the organs of the body are in an embryonic stage of development, must be considered a vital factor in the delineation of the structure and function of the adult organism. Nutrition during this stage is certainly capable of modifying many very fundamental constitutional characteristics. Warkany[63, 64] has demonstrated the production of many gross bodily deformities in rats kept on highly deficient diets. Unfortunately, he has not been able to determine the exact nature of the nutritional deficiences he is producing and which result in deformities of the fetus. Hale[31] has demonstrated that congenital blindness can be produced in pig fetuses of mothers who are grossly deficient in vitamin A during pregnancy. He has also noted an increased tendency toward cleft palate in these same pig embryos. Deficiences of this sort causing gross physical abnormalities may be expected also to produce modifications in the physiology as well as in the structure of the nervous system. They are, of course, of a severity that is not likely to be encountered in human pregnancies except during periods of starvation such as have existed in India, China, and certain sections of Europe during World War II. Deficiences of a magnitude as to produce no gross anatomical abnormalities probably would be capable of modifying the functions of the nervous system in ways perhaps too subtle to be measured in a conclusive configuration. The importance of the B vitamins in the normal functioning of the nervous system has been amply demonstrated.[24, 66] Experiments have shown that in deficiency diseases of the B complex there is marked deterioration of learning processes and memory as well as energy. Vitamins, functioning as they do as coenzymes, are a part of the catalysts through which all processes of metabolism and cell growth are accomplished. Without them, enzymes cannot be activated by the hormones of the body, and all important physiological processes are to a greater or lesser degree inhibited. With vitamins of the B complex group such limitations in metabolism and growth are immediate. Since the B complex is not stored in the body for any appreciable length of time, defects in embryonic structure and

function may be expected from even short periods of deficiency. Vitamin D deficiency, since this vitamin may be stored for considerable periods of time in the body, may not become evident until some time after the birth of the child. Rector[45] has shown that vitamin D deficiency during pregnancy predisposes the infant to rickets which may develop at a much earlier age and with a better neonatal nutrition than is customary in children born of mothers with a more adequate vitamin D intake. K. U. Toverud and G. Toverud[62] have demonstrated the same phenomenon. They have also shown that infants whose mothers were maintained on diets inadequate in vitamin D have tended to develop dental caries of the deciduous teeth at an earlier age and in greater number than have children of well-nourished mothers. Analysis of the diets of mothers in the Fels Research Institute group and of the incidence of dental caries in Fels Institute children has confirmed this finding.[53] Severe anemias of pregnancy, while they usually fail to produce any demonstrable changes in hemoglobin values of the blood of newborn infants, manifest themselves later in a predisposition toward lower hemoglobin levels and often in severe anemias during early infancy.[59] Here, then, are prenatal processes by which the energy and resistive qualities of the young infant to his environment are modified not during the fetal period when the nutritional deficiency actually occurs, but at a subsequent time during which growth and maturation are still in full swing, and during which the processes of learning and social adaptation have been superimposed.

Actual building materials, probably primarily the amino acids, are supplied not only from the mother's diet but also from her reserves in muscle, liver, and other organs. That is, there is normally a basal level of blood amino acids for each individual which is probably almost as definite as are fasting blood sugar or serum calcium. The maintenance of blood amino acids from both food protein and body stores is a homeostatic process. Their level in the blood stream, the factor which apparently is paramount in the rate of their diffusion through the placental membrane, can be and is maintained for a considerable period after a protein deficiency in the maternal diet has begun. The ability of maternal protein reserves to maintain adequate amino acid blood levels is, nevertheless, not unlimited.[49] In experiments with rats starvation definitely reduces such blood amino acids, with a resulting decrease in survival rate as well as lower body weight of the offspring. Burke and others,[25] and Ebbs, Tisdall, and Scott[27] have claimed decreases in the body weight and length of infants born from protein-deficient mothers. They have also claimed greater incidence of physical deficiencies of various sorts in the offspring born of such mothers. However, our Fels Research Institute studies have not entirely confirmed these observations.[54] While the results are not conclusive, nevertheless the possibility of maternal protein deficiencies modifying physiological constitution, and the adequacy and the nature of growth and nervous system response cannot be discounted. Nutrition as a mechanism for modification of genetic potentials for constitution is a factor of the utmost significance. It is unfortunate that in man the period of embryonic development and fetal nutrition is so far separated in time from the age when environmental stresses manifest themselves most seriously through disturbances of somatic function that tracing any relationship between fetal nutrition and such disturbances is well-nigh impossible. So many environmental circumstances occur during the intervening periods of infancy, childhood, and adolescence which modify constitution that controlled observations are most difficult. The picture is further complicated by the complexity of human genetics and the difficulty of classifying human constitutional types on a genetic basis.

Another aspect of nutrition during the fetal period which may be of significance in affecting the selection of a channel for somatic manifestation of emotions is the possibility of the development of allergies to specific foods during the intrauterine period. Ratner[43] has written extensively on this subject. On the basis of his work, it seems possible that some of the infantile and even adult allergies which are psychosomatic expressions to some degree may have their origin in prenatal life. Presumably the placental barrier is impermeable to protein molecules. Perhaps it is a defective placenta that permits proteins from the maternal circulation to appear in the fetal circulation with the resultant production of a fetal sensitivity to them. It seems probable that it is through some such placental difficulty that the red cells of the Rh-positive child find their way into the maternal circulation of the Rh-negative mother and develop in her body agglutinins to the Rh-positive fetal red cells.

4. **Other Environmental Factors.**—The human fetus may upon occasion be subject to certain stress situations which are perhaps not greatly different from some of those experienced after birth. What is apparently a Moro reflex can be produced by violent sounds at any time during the last few months of pregnancy. This startle reflex is apparently identical with that exhibited during early infancy. In this period it consists of convulsive movements of the arms and legs, and an arching of the back. There is also an instantaneous acceleration of the heart beat and a change in skin resistance. All of these changes are produced in response to almost any loud sound, such as the banging of a metal pan with a spoon. The changes in heart rate and skin resistance accompanying the contractions of the skeletal muscles in infants are evidences of the emotional value of the stimulus and its expression through various autonomic channels. Such startle reflex patterns in fetuses have been produced under laboratory conditions by a number of investigators,[44, 55] and they probably occur with considerable frequency in other situations. Pregnant women often complain of a marked increase in fetal activity from the vibration of a washing machine, a piano, a violin.

That such stimuli are capable of perception by the fetus is, then, an established fact. That there may be a change in the pattern of autonomic response when the stimuli are often repeated is suggested by the work of Spelt[58] and also by some experiments at the Fels Research Institute.[39] Spelt has reported the conditioning of the human fetus to sound stimuli. He was able to train the fetus to anticipate an irritating sound or vibration by associating it with a perceptible but less irritating sound for a considerable number of times. Fels experiments in this area have dealt with the ability of the fetus to adapt itself and one of its autonomic responses to recurrent, irritating vibrations. As stated previously, the heart rate of the human fetus undergoes an instantaneous acceleration upon the application of the proper sound stimulus. This acceleration is of considerable magnitude and is maintained for some time after the termination of the stimulus. Under normal circumstances the response can be elicited more than three months before birth, and its heights and duration are progressively greater as term approaches. If, however, over a period of weeks a fetus is stimulated daily with several episodes of sound, some adaptation or "learning" occurs in its autonomic reaction, as expressed by heart rate. After such a period of training, the heart rate response, instead of becoming greater as term approaches, is markedly reduced. Furthermore, the recovery period is cut to one-half or one-third of its previous time, and often the rate falls below its prestimulation mean at a time when in the untrained fetus the full height of the cardiac acceleration is being maintained. Here, then, is an instance where the expression of the somatic component of emotion is being modified before birth. While the results of this work suggest that the outcome of the modification may be toward a lesser somatic component of emotion or a more stable autonomic system, it would be unwise to conclude that such is the permanent effect of the fetal experience. Nor is it possible to determine whether such experiences at this particular developmental stage, when heart rate is peculiarly unstable, may be establishing a pattern for the somatization of future stresses.

Maternal emotions and severe fatigue may produce changes in levels of some of the components of maternal blood, perhaps in adrenalin or acetylcholine, which are transmitted to the fetal circulation. Fetal activity is markedly increased during periods of maternal emotional stress.[55, 56] From a single episode of anxiety or anger that apparently subsides within a few minutes, there is often an increase in fetal activity which is maintained for four or five hours. This prolongation of fetal response to emotional stress offers an interesting comparison to the observation of people suffering from peptic ulcer. In such individuals a severe emotional stimulus lasting for only fifteen minutes may cause motor and secretory changes in the stomach and duodenum which are apparent for many hours, or in some instances, even for days. When the maternal emotional stress is not in the form of a single severe incident but rather exists as a more or less chronic anxiety or fear, the level of fetal activity tends to remain high. Observations have been made about a woman whose husband developed a severe psychotic episode during her last months of pregnancy, about one whose husband was killed during the eighth month of gestation, and in other similar cases. In each of these instances there existed for the full duration of the anxiety a very much heightened level of fetal activity as well as of heart rate. There are demonstrable differences in the behavior and physiology of infants of such pregnancies which often appear to be directly related to the continued stimulation the fetus has experienced. Newborn infants so stimulated are, on the average, lighter in body weight in relation to their length than are those not so stimulated during pregnancy.[56] This indicates that the stimulated infants may have used a part of their fetal nutritional resources for energy metabolism rather than for the creation of body tissue. Furthermore, such infants tend to be hyperirritable and restless, and tend to have increased muscle tension at birth. They are prone to disturbances of gastrointestinal motor function such as frequent and loose stools and intolerances of food. Among them are found many of the infants who are unable to retain easily either breast milk or any artificial feedings. They are off to a bad start in life and have already learned the expression of a large component of stress through their gastrointestinal tracts. It is possible that more or less permanent characteristics of their behavior patterns have been established through this prenatal stress situation.

5. The Birth Process.—Certain experiences or conditions at birth may be of importance in determining how and to what degree emotions will be somatized in later life. The use of heavy sedation during labor may, according to Schreiber,[47] so suppress the respiratory processes of the newborn infant as to produce a neonatal anoxia capable of damaging in a permanent way the infant's brain cells. Windle[67] has called attention to the changes in the behavior pattern of animals subjected to artificially-induced anoxia at or before birth. Such changes, altering as they do the function of perhaps many parts of the nervous system, may be considered important determinants of the adult behavior pattern. Brain injuries resulting from the passage of the head through the birth canal can and do have similar effects. Schroeder[48] and others have written extensively on this subject. Brain injuries may be of such magnitude as to produce Little's spastic paraplegia or they may be of such minimum nature as to affect only a small part of the nervous system in such a way as to modify within normal limits intelligence, motor, or autonomic function.

Windle[26] has called attention to the fact that infants whose umbilical cords are cut immediately after birth so that the blood still in the placenta remains there and is not forced into the fetal circulation, have a less adequate storage of iron and as a result have lower hemoglobin levels. This fact may only become apparent weeks or months after birth. Even mild anemias resulting from such a factor will modify to some degree the vitality of the infant and his adaptation to his new environment. They may in this way be considered as of possible importance in the development of individual differences in patterns of the somatization of stresses in later life as well as in infancy.

Biochemical-Physiological Factors in Relationship to Heredity as Determinants

1. Symbolism and Purposeful Selection of an Organ System.—Several theories exist which explain differences in somatization of emotions but which ignore entirely or in part the inherited physiological-biochemical characteristics of the individual. These, in contrast to the general consideration of the possible part which fetal life, experience, and environment may play in modifying patterns of somatization, are definite theories as to how channels of excessive somatization are established. One of these is what Weiss and English[65] call "organ language." This theory presumes the selection of a given organ system for preponderance of somatization on the basis of the symbolic meaning of the function or structure of that organ system in the emotional orientation of the individual. It presumes that diarrhea or vomiting with its associated nausea may be expressions of guilt through which the patient attempts to rid himself of a guilty feeling or of the thoughts which produce it. The heart as a symbol of affection may upon the basis of such a theory be subject to dysfunction when an individual's status in terms of the desired love or approval of a particular person is jeopardized. Pernicious vomiting of pregnancy and perhaps some of the vomiting of morning sickness may symbolize an attempt by the mother to rid herself of the fetus. Asthma has been referred to as symbolic crying. Skin diseases such as acne rosacea may serve as stigmata for purposes of self-punishment or for overt expressions of guilt.[57] They may even be elected for the purpose of repelling other individuals with whom relations are strongly desired, relations which would by their very existence provide a sense of guilt. Scientific observations of the ability of some individuals who under the stimulus of strong religious fervor have been able to produce stigmata upon their bodies, attest to the possibility of a certain purposeful control of organic function, in this instance, localized cutaneous vascular function. The psychic vomiting of children, often observed in instances where coercive food regimes have been attempted by parents and have been met with active rebellion on the part of the child, attests further to the possibility of the purposefulness of patterns of somatization of emotions. Instances have been seen in two- or three-year-old children in which toxic processes could be rather thoroughly ruled out and in which the vomiting never appeared at a nursery school luncheon where coercion was absent, although it occurred regularly both at breakfast and at the evening meal when the child ate with, and was coerced by, the mother. Such psychic vomiting is obviously an expression of hostility, but the medium selected for the rebellion is the gastrointestinal tract, apparently because the situation inciting the hostile response is a problem of food. Such an example of purposeful selection of an organ system for somatization is interesting and appears to be very common in infants, children, and young adults. However, it is probably not the sole basis for the selection of a somitization pattern.

2. **Homeostasis.**—Dr. Ives Hendrick, psychiatrist and psychoanalyst, has suggested another hypothesis which he describes as follows[33]:

> "The ultimate problem of psychosomatic medicine is that of selection of organ system in the resolution of emotional conflicts by alteration of normal physiologic function. The best known efforts to answer this problem—that the locale of disease is determined by the symbolic meaning of the organ, that the organ is fixated by coincidence of systemic disease and emotional conflict during infancy, that each organ activity satisfies specific forms of active or passive emotional needs—all these seem to me pertinent to special cases, but do not provide an acceptable generalization. The phantasies, especially unconscious phantasies, of patients give us invaluable information as to the specific nature of the crucial conflict, but do not show solely why the tension leads to dysfunction in a specific organ.
>
> "I am proposing an hypothesis which has much to recommend it, and does not necessarily contradict those mentioned above. My hypothesis is that the 'choice' of organ system is the result of *'physiologic infantilism,'* or immaturity of homeostatic processes in an organ system. This hypothesis is based upon the fact of physiology that disturbances of homeostasis in infancy normally lead to quantitatively greater reactions than similar stimuli produce in the more mature organism. Thus the heat-regulating mechanism of the definitely premature neonate is poor or absent, whereas it is normally well developed in the fullterm baby. Older infants normally show their immaturity of the temperature mechanism by the fact that a disturbance of a given severity, for example, an infection, normally produces a much higher temperature than the same threat does in the older child or adult. The same is true of leukocytic reactions, indeed of all physiologic systems. The preschool child, for example, oftens react normally to relatively mild emotional disturbances, especially the threat of loss of love, by nausea or vomiting—such gastric disturbances at an early age are often the equivalent of mental depression in later years. The electroencephalogram illus-

trates this principle in another system where physiologic maturity is established still later: brain waves of the normal child are not stabilized patterns like those of adults, and frequently reveal in normal children waves which would be characteristic of epilepsy in maturity.

"My hypothesis is that psychosomatic diseases are based upon a physiologic lability of the autonomic nervous system normally found at immature development levels, and that these phenomena might well be considered another type of the regression or fixation at an infantile functional level with which we are familiar in the mental characteristics of the psychoneuroses. The hypothesis can, therefore, appropriately be referred to as the *principle of physiologic infantilism, and defined as the tendency to discharge conflict in those organs where the physiologic lability of normal immaturity has been retained or can be reestablished.*"

3. Maturation and Learning.—There is a further possible extension or modification of Dr. Hendrick's hypothesis which might also be worthy of mention. We are all aware that it is possible in human beings to condition autonomic reflexes. In certain individuals in varying degrees it is possible, for example, to condition the pupillary reflex so that contraction of the pupil may be produced not only from exposure to light but also by merely saying a word or even upon occasion by the patient's thinking that word.[35] It is possible to condition a human being so that upon seeing a certain colored light there will follow a contraction of the blood vessels in one arm with a resulting fall in temperature in that arm.[37] This process may be produced by using the light in conjunction with the immersion of the arm in cold water upon repeated occasions. In this instance the individual has been led to associate the arm immersion and its resulting vasoconstriction with the specific type of light, and eventually the vasoconstriction occurs as a learned anticipation. All of us have known individuals who, having been made severely ill by some particular food upon one occasion, will feel a nausea and may even vomit when they see that food at a subsequent time.

There is an age differential in the maturation of the homeostatic process, or processes, of maintaining the normal state of function of the various organ systems. It is conceivable that a strong anxiety, first developed at an age when a particular system is most unstable, might be expressed through that organ system. By a learning process somewhat akin to conditioning, future anxieties occurring during adult life might elect the same organ channel through which the initial anxiety was expressed. Thus, a child experiencing a severe anxiety state at the age of one or two years when the colon is particularly labile in its motor functions might as an adult tend to express his neurosis through dysfunction of the same organ. There is some evidence that the vascular system is particularly unstable at or about the period of adolescence when fainting and blushing as well as probably blood pressure changes are common. An individual learning to express an anxiety at this particular age might express an adult anxiety through the same channels. Again there is no appraisal of the actual part such mechanisms have in the election of a channel for the somatization of adult fears, frustrations, and anxieties.

4. **Inherited Organ Inferiority.** — Constitutionalists have claimed that predisposition to the so-called psychosomatic diseases is primarily an inherited characteristic. They have certain evidence for this belief in the form of studies of the familial incidence of such diseases. However, they are perhaps too much inclined to deprecate the role of the inciting psychic factor in the actual development of the diseases. In many instances disturbances of function of a given organ system probably have a basis in genetic differences in structure and physiology of the organs. But again it is essential that we recognize that the behavior and function of any organ is the result of the sum of inherited characteristics and their modification through environmental impacts. As an example of the constitutionalist tendency to disregard the psychic factor in many diseases, Bauer[21] attributes the development of peptic ulcer to what he calls a "biological inferiority of the organ." He describes this "biological inferiority" as an inherited characteristic. He points out in his series of 255 ulcer cases that if both parents of an ulcer patient were free from any ulcer trouble only 10.8 percent of their children developed ulcers. If one of the parents had some kind of chronic stomach disturbance, 25.7 percent of their children suffered

from ulcer. From these figures Bauer concludes that the constitutional predisposition to peptic ulcer is probably a simple recessive mendelian characteristic. He does not imply that if such a constitutional predisposition exists the individual will necessarily have ulcer. The disease will appear "only if some other intrinsic or extrinsic conditions are fulfilled." He finds such conditions fulfilled in about half of the people with this predisposition. By his statement "neuropathic constitution with its hyperirritable autonomic nervous system is probably the most important one," Bauer does imply the importance of a *general* constitutional factor in addition to the "constitutional biologic inferiority" of the stomach and duodenum.

In the case of hypertension Bauer suggests that the proper vascular tension depends (a) upon normal elasticity and reactivity of the vessel walls; (b) upon the normal function of the nervous system and its various parts; and (c) upon the adequate and proper liberation of the "hypertensive and perhaps hypotensive hormones dependent upon the normal function of certain endocrine glands, chiefly the suprarenals." Bauer considers this highly intricate mechanism and its integrated character preserved by a special gene or gene-complex governing this "unitary biological process." He states further that the alteration of this gene or gene-complex may occur in either direction causing hypo- or hypertensive constitution. The hypertensive constitution may be recognized in advance of the development of an actual hypertension by a response to the cold-pressor and other tests. Hines[34] has obtained similar results with the cold-pressor test. While high blood pressure itself did not follow the pattern of either a true dominant or recessive mendelian characteristic, at least in the age level tested, response to the cold-pressor test by various members of hypertensive families did tend to show the expected distribution of a dominant characteristic. It was presumed then that all these people were potentially hypertensive and possessed of a hypertensive constitution and could under the proper circumstances develop true essential hypertension. Jost and Sontag[36] have demonstrated that there is greater likeness among siblings in response patterns to a battery of autonomic measures than there is among nonsiblings. The patterns of monozygotic twins are much more alike than are those of other siblings. These findings suggest an inheritance factor in many types of autonomic function.

While the constitutionalists, then, have not emphasized the part that psychic factors or life experience may play in the development of the group of diseases we are discussing, they have presented certain evidence to show that inheritance or what might be called predisposition to many psychosomatic diseases does occur. They have perhaps overemphasized the importance of the "biological inferiority" of the tissues of the organs themselves and underemphasized the part that excessive and prolonged motor stimulation to these organs may play. Furthermore, while they demonstrated the inheritance of predisposition to malfunction of various organ systems, they did not very adequately consider the possibilities of the basic nature of these predispositions. To say that a gene-determined, integrated mechanism for the control of vascular tension exists is not very indicative of the possibilities of what sort of a mechanism is involved. The possible inclusion in the mucosa of the stomach and duodenum of embryonic rests containing cells less capable of resisting the digestive acid and enzymes would hardly explain the changes which occur in the blood vessels of the hypertensive. It is difficult to conceive how the inclusion in the musculature of the vessels of immature or poorly differentiated smooth muscle fibers could account for a generalized increase in vascular tension.

5. Inheritance of Physiological Patterns—Enzyme Systems.—The fields of enzyme chemistry and physiological genetics offer interesting possibilities for what must, as yet, be almost pure speculation of the possible nature of some of these inherited predispositions to psychosomatic disease. Expanding knowledge in the field of physiological genetics suggests that the inheritance of various differences in many patterns of physiological function in animals may be explained as an inheritance of a differential concentration of cell enzymes in various parts of the body.

Enzymes or organic catalysts make possible all of the metabolic processes of living tissue. They are sometimes spoken of as life itself. There are perhaps 1,000, perhaps 100,000 different enzymes in the human body which individually and together control every phase of metabolism in the cells of the brain, endocrine glands, and muscles. The field of physiological genetics, as already indicated, is concerned with the inheritance or gene-determination of various patterns of enzyme function. Dr. George Beadle,[23] geneticist, has recently mentioned many interesting aspects of this field, some of which are worth dealing with here.

In all living organisms protein synthesis from amino acids and breakdown into amino acids are dependent upon a large series of enzymes. One of the essential amino acids is phenylalanine. Tyrosine, another amino acid, need not be present in the food supply of man since it can be synthesized from phenylalanine. Man can oxidize tyrosine into what is commonly called "dopa," which upon further transformation may become melanin, which gives color to skin, eyes, hair. Similarly, phenylpyruvic acid undergoes a series of processes of oxidation and in normal human beings is finally broken down into water and carbon dioxide. An intermediate compound in this process is homogentisic acid. There are certain individuals who cannot proceed with this oxidation process beyond the homogentisic acid stage. These persons differ from others in that they have a pair of defective genes or a gene-determined absence of the necessary enzyme for this chemical process. Individuals not able to metabolize homogentisic acid can be recognized by the fact that the homogentisic acid discarded in their urine oxidizes upon exposure to the air and becomes black. They are called alcaptonurics. Here, then, is an example of an inheritance of an atypical or defective pattern of enzyme machinery in which an enzyme normally present in the cells in adequate quantities is completely absent. Another example of the inheritance of a defect in enzyme machinery is seen in persons unable to oxidize phenylpyruvic acid. These individuals, phenylketonurics, are invariably mentally defective, usually imbeciles or idiots. Apparently the ability to oxidize phenylpyruvic acid is essential to the function of the central nervous system. The metabolism of phenylpyruvic acid may be essential for the higher order of thought processes, or perhaps its accumulation depresses the normal function of the brain. Here, then, are two examples of metabolic processes in man which are entirely lost because of the genetically determined complete absence of one enzyme system.

There are many similar examples of inherited absences of a part of an enzyme system in other animals.[46] Some rabbits are able to metabolize or destroy atropine through an enzyme, atropine esterase. If atropine in substantial doses is injected into the blood stream of rabbits, something like three-quarters of them will die instantly. About one-fourth, however, will be entirely unaffected. If the livers of the rabbits who are able to survive the injection are crushed and mixed with atropine in a test tube, the atropine will be completely destroyed through the action of the atropinesterase in the livers. If the livers of rabbits sensitive to atropine are treated similarly, however, and atropine is added, it will remain unchanged since there is no atropine esterase available for its destruction or detoxification. An interesting linkage exists here since the presence or absence of this enzyme is borne on the same chromosome as that determining the extent of black pigment in the coat. This particular inheritance of a physiological function pattern has two further significant implications. One is that atropine esterase is never present in the liver of any animal at birth, but appears in those animals who are to be resistant to atropine poisoning at about one month of age. Here, then, is not the actual inheritance of a physiological ability present at birth, but rather of a propensity for the development of that characteristic as a part of the maturational pattern of the individual. The other interesting implication comes from the fact that the inheritance of this characteristic is not an all-or-none affair. Homozygotes for atropine detoxification have greater concentrations of atropine esterase in their livers than do heterozygotes and are capable of detoxifying greater quantities of atropine more rapidly.

6. Enzyme Distribution Patterns. — These various examples of differences in inheritance of cell enzymes and of differences in the physiological ability or metabolic responses of organisms together with degree of inheritance suggest the existence of mechanisms by which various organ systems may respond differently to the physical-chemical stimulation of nervous impulses. Metabolic or secretory function of the highly specialized cells of the human body might be expected to be different in different individuals on the basis of the enzyme machinery which was a part of their inheritance. Hypoglycemic shock or hyperinsulinism might be explained upon the basis of the inheritance of a more effective enzyme mechanism in the insulin-producing cells of the pancreas than in the super-renin-producing cells of the adrenals. The fear response of the individual with such an enzyme inheritance pattern might be, then, an imbalance between the suprarenal mechanism for increasing the blood sugar and the pancreatic mechanism for burning it. Somatization of an emotional stress in this instance would be preponderantly a pancreatic one, with a blood sugar lowered beyond its critical point resulting in the alarming manifestations of hypoglycemic shock.

Such a differential distribution of specific parts of cell enzyme mechanisms is probably the basic factor in the determination of body types and their inheritance. The various bones of the skeleton grow by a process of metabolizing proteins and minerals through the actions of a series of enzymes. Such enzyme action may be modified by the concentration of the available vitamins which act as co-enzymes and without which the enzymes themselves cannot function. They are selectively activated by various components of the hormone system. Differences in rates of growth of the various bones which are productive of the final relationship between body breadths and lengths might theoretically be attributed to differences in vitamin and hormonal concentrations. However, since both these substances are carried in the blood stream and are theoretically available in equivalent concentrations to all of the body cells, differentials in the growth rates of such transverse structures as ribs, clavicles, scapulae, and the bones of the leg must be dependent upon other causes. Presumably these causes are inherited differentials in the concentration in the ends of the various long bones of certain of the enzymes vital for growth. Similarly, degree of gene-expression, as it may determine enzyme concentration in various organs, may be a significant factor in the threshold level of response to stimuli.

7. **Enzyme Systems and Autonomic Nervous System Function.**—There is another aspect of physiological genetics which may have a bearing on the problem of somatization. All human beings have in their liver cells an enzyme called ethanoloxidase, essential for the metabolism of alcohol. Here, however, is an example of an enzyme which through repeated stimulation or usage can have its concentration very greatly increased. It is this increased concentration of ethanoloxidase which probably determines to some degree the amount of tolerance for alcohol any individual can develop. Presumably the "lost-weekender" who literally lives on alcohol has built up the concentration of the enzyme necessary to metabolize it to such an extent that he can utilize alcohol very heavily as an energy food, and until he runs into protein and vitamin deficiency, he can exist on it alone. The degree to which his cells have the ability to increase this particular part of his enzyme system is probably a gene-determined characteristic. Other individuals, while they may be able to increase their mechanism for the metabolism of alcohol to a considerable degree, are never able to attain as great a proficiency in its use as an energy food. Apparently, there is a gene-determined potential for the development of any enzyme system, and this is different for different individuals. It is an example of how inherited characteristics can be modified to varying degrees in individuals, in each instance within gene-determined limits.

Such fundamental facts of physiological genetics may be used as the basis for the postulation of theories which might explain differences in the *transmission* of autonomic nervous system stimuli resulting from emotional stresses, and therefore for differences in the somatization of emotions. Two substances are essential for the origin and transmission of impulses over the autonomic channels. These are sympathin and acetylcholine. Sympathin, allied to or identical with suprarenin, is liberated by sympathetic impulses and is involved in total somatic response. Acetylcholine and sympathin are essential to the origin and transmission of autonomic impulses. Both are found in cells of the hypothalamus, the synapses, and at the motor end plates of organs. Acetylcholine is essential for the mediation of impulses from the preganglionic to the postganglionic fibers even in the sympathetic channels. Both of these substances are produced by specific tissues in the body, and in the case of acetylcholine the mechanism of synthesis is now established as depending upon the specific enzyme choline acetylase. Like enzymes in other cells, its concentration may be increased to a greater or lesser degree, probably as the result of repeated and persistent impulses over the autonomic chain. Such a process of increase might explain the tendency to prolongation of somatic symptoms from an acute emotional episode, since the exaggerated use of autonomic channels during the period of stress would enhance their ability to function.

8. **Limitation of Autonomic Effect Through Enzyme Function.**—Along with the synthesis of sympathin and acetylcholine, there is also destruction of these substances by enzymes—amino oxidase and acetylcholine esterase—which are also present in the hypothalamus, the synapses, and the motor end plates. They tend to limit the action of acetylcholine and sympathin. Of the two, amino oxidase acts more slowly than does acetylcholine esterase. It is possible that the balance between acetylcholine-sympathin producing enzymes and the enzymes destroying these substances may be an important mechanism in determining the duration of disturbed somatic function and also its severity. The genically determined limits to which any one or more of these enzymes can be *increased* by stimulation,

differences in the way this potential may be *distributed* in various parts of the autonomic chain and at the end plates of various organs, and the *balance* between such potentials may constitute important parts of the complexity which we might well call psychosomatic constitution, or what Mirsky calls physiologic tolerance.*

SUMMARY

Individuals differ tremendously in their predisposition to psychosomatic disorder. They also differ in terms of the particular organ system they select for the preponderant somatic expression of their emotions. This pattern of the somatic expression of emotion I have called psychosomatic constitution. The psychosomatic constitution of any individual is very probably the resultant of a variety of components. It is a composite of gene-determined characteristics together with their modification through a wide variety of environmental impacts and through learning. Many of the physiological characteristics of an individual, including probably certain of those of the autonomic transmission system and of the cell metabolism of various organs, are inherited through the mechanisms of gene-determined characterstics of the body's enzyme systems. These inherited characteristics can conceivably be modified by such fetal environmental factors as maternal nutrition, gaseous interchange between mother and fetus, the mother's endocrine function, and any drugs which she may take, even before the birth of an individual initiates the modifications of such characteristics by environment and life experience. Changes in her body, and therefore blood composition, which are a part of her own emotional state may through a placental interchange become an important part of fetal environment. The birth process itself may, through the production of an anoxia or loss of potential iron stores of the fetus, modify psychosomatic constitution. Symbolism and purposefulness may be important factors in the selection of the organ system for the expression of an emotion. Differences in the maturation rate and degree of homeostatic characteristics of the body, either gene-determined or as a result of environment, must be considered. As yet, there is no adequate evaluation of the relative importance of these various factors in the determination of physiologic tolerance. Any or all of them may be of importance in the delineation of the psychosomatic constitution of any individual, or what Mirsky calls physiologic tolerance.*

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* Mirsky, I. Arthur: In a personal communication to the author.

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* Mirsky, I. Arthur: In a personal communication to the author.

CHAPTER III

INTRODUCTORY: NERVOUS AND LOCOMOTOR SYSTEMS

The general practitioner who encounters severe disorders of the central nervous and locomotor systems is likely to refer such patients to a specialist in this field, or at least to request a consultation. Therefore, the material presented here will not include the detail reflected in the outline of Osler's chapter on the same subject but the practicing physician may well bear in mind three points:

1. An adequate differential diagnosis can be made only when an evaluation of the personal history is added to the neurological investigation.

2. Although diseases of the central nervous system are among the last illness syndromes to be studied psychosomatically, emotional factors play a role just as in any other illness syndrome in determining onset, course of illness, and treatment. As noted in the introductory chapter: The earlier concept that unconscious or emotional factors could play a role in dysfunction only by way of the involuntary nervous system and viscera, and that the mechanism for symptom production in those parts of the body more directly under cortical control must be purely psycho, that is hysterical, has been outmoded.
This has happened partly because scientists working in the field have begun to pool their results. Experimenters with animals have discovered that a conditioned reflex involving the central nervous system follows almost the same pattern as a reflex mainly involving the autonomic nervous system.

3. Nevertheless, the general picture of the role played by the central and autonomic nervous systems is of great help in the differential diagnosis not only of illnesses definitely related to these systems but also of any illness of the human organism whether localized or general.

Dr. Sydney Rubin, whose chapter on the gastro-intestinal system follows this introductory chapter, was so well aware of this fact that he wrote a brief statement on the nervous system to introduce his subject. The paragraphs to follow are his, but seemed sufficiently important as an introduction to all chapters in Part II of this synopsis to warrant special attention.

The autonomic nervous system, which is to a certain degree independent of the central nervous system, is a product of evolutionary development and serves to relieve the central nervous system of a portion of its work. Division of labor, that is, in the orientation of soma to the external world and the regulation of inner processes, increases the efficiency of the organism. The central nervous system, relieved of the task of inner regulation (performed by the autonomic system), becomes more efficient in solving the problems of orientation to external reality.

The autonomic nervous system, however, does not become entirely independent of the central nervous system in the human body. There is a complicated interrelationship between the autonomic ganglia and the central nervous system, and all visceral organs receive nerve fibers both inside and outside the central nervous system. A knowledge of the anatomy and physiology of the autonomic nervous system is therefore of advantage in understanding the emotional factors related to diseases of the gastrointestinal tract.

It is generally established that the sympathetic division is an emergency protective mechanism and is catabolic.[84] It is stimulated by epinephrine and sympathin and is depressed by ergotoxine, ergotamine, and nicotine. It is depressed also by overaction of the parasympathetic nervous system.

The craniosacral system, i.e., the parasympathetic, in contradistinction, is anabolic, conservative, and protective.[84] The sacral division is concerned with the emptying of hollow organs. The craniosacral system is stimulated by pilocarpine, choline compounds, and pituitrin. It is supposedly inhibited by atropine and nicotine, and by overaction of the sympathetic nervous system. The two systems are in a state of balanced opposition somewhat comparable to the action of flexor and extensor muscles.

In this connection it is useful to think of every reaction of an organism to a new stimulus as being superimposed upon a base line which is in reality fluctuating and which is a reflection of the organism's response to an ever-changing environment.[102] It is important to note, therefore, that the varying physiological states of certain tissues may in themselves determine the nature of response to a stimulus. In the cat, for example, the effect of vagal stimulation on the stomach may be increased peristalsis if the tonus of the organ is low at the time of stimulation, and relaxation if it is initially high.

In earlier clinical literature,[81] there was a tendency to classify patients as sympathetico-tonic or vago-tonic individuals according to the particular division of the autonomic nervous system which seemed to predominate in these people. The concept, as Sheehan states, though it contained an essential truth, is now discarded, for the same individual may exhibit sympathetic and parasympathetic manifestations in different situations and frequently both are called into play at the same time in a selective manner.

Cannon's demonstrations of the role of the sympathetic nervous system in the motor expression of emotions of fear and rage is well known.[76] The typical picture of profuse sympathetic discharge, i.e., dilated pupils, rapid heart, deepened respiration, pallor, sweating, and dry mouth, is characteristic of the behavior of a frightened individual, but parasympathetic responses are equally observable during emotional behavior. Secretion of gastric juices and hypermotility of the stomach accompany the sight and smell of appetizing food, but only so long as the vagi are intact.

Gellhorn[85] has shown that in the cat confronted by a barking dog there is a secretion of insulin which is abolished by vagotomy. It may not be justifiable, therefore, to interpret types of emotional behavior in terms of purely sympathetic or parasympathetic responses; for, evidently, both systems are frequently activated simultaneously. This balancing effect of the two divisions for the autonomic nervous system contributes in large measure to the constancy of the internal constitution. This condition has been called homeostasis by Cannon.[77] To his extensive studies we owe much of our present understanding of this delicate balancing mechanism.

It should be recalled that, unlike the cerebrospinal system, the fiber arrangement of the vegetative nervous system is widespread and diffuse. This accounts for the rather widespread action observed clinically and in experimental procedures, especially as related to the sympathetic system. In this connection Cannon states: 'The sympathetics are like the loud and soft pedals of a piano, modulating all the notes together; the cranial and sacral innervations are like the separate keys.'

From the anatomical point of view, the important visceral terminations of the autonomic system in the gastrointestinal tract are the submucous and myenteric ganglia within their respective plexi. Much work[70, 91, 92] tends to show that these centers are in a large measure autonomous but that they are, however, influenced significantly by the parasympathetic nervous system, and less directly perhaps, by the sympathetic nervous system.

The preganglionic parasympathetic fibers reach these visceral terminations by way of the vagus nerve, whose fibers supply the whole of the alimentary tract from the esophagus to the transverse colon. The sympathetic fibers, destined for the gastrointestinal tract, have a much wider origin and may start from cells in the vertebral and prevertebral ganglia, and reach their destination along blood vessels, supplying the particular organ and forming a perivascular network.

The suprasegmental connections of the vegetative nervous system are less well understood. We know that fibers destined for both divisions of the vegetative nervous system traverse the medulla, pons, midbrain, and diencephalon. Experimental and clinical evidence suggests that the diencephalon plays a major role in regulating the efferent impulses of both divisions of the vegetative nervous system.[69, 89, 90, 99]

It is worth stressing that the diencephalon is now recognized as having a marked influence upon the endocrine function, metabolism, and heat regulation, as well as receiving impulses from and sending them to the old and the new brain and the neuraxis. Of equal importance is the fact that the region of the diencephalon is regarded as one of the major centers concerned with the regulation of expressions of emotions.[96]

Less definite is the knowledge of cortical representation of the efferent vegetative nervous system.[98] Fulton[83] states, that gastrointestinal representation in the frontal lobe has been indicated by changes in peristaltic activity of the stomach and intestines produced by faradic stimulation, and also by disturbances of motility which follow bilateral ablation of this area.

The neurophysiology of the efferent pathways of the vegetative nervous system is poorly defined. At one time it was thought that there were no sensory nerves in the viscera, especially in the gastrointestinal tract, and that pain was always a result of the involvement of structures supplied by the somatic nerves[95] such as the parietal peritoneum. Later, however, it was thought that pain occurs in disturbances of the intestinal tract by overdilation and overcontraction of the hollow viscera or by stretching of the capsule of solid organs.

The work of Ross,[101] Head,[87] Mackenzie,[96] etc., evolved the concepts of viscerocutaneous, visceromotor, and viscerovisceral reflexes to explain the various painful phenomena originating in diseases of the internal organs. It has been more recently pointed out that the viscera have sense organs identical with those in the skin. However, they are subjected only to intrinsic stimuli which, even if they reach consciousness, are not and cannot be interpreted in terms of other sensory impressions.

The course of the efferent fibers is essentially the same as that of the somatic nerves. After traversing the vegetative plexuses and ganglia they proceed in the posterior roots and ascending spinal tracts, through the spinal cord, neuraxis, and after a relay in diencephalon, on to the cerebrum.

When one views the entire vegetative nervous system and its connections, the impression is immediately gained that the diencephalon plays a major role in disturbances of this system from both the physiological and emotional standpoints; since the diencephalon is apparently a relaying station for fibers mediating a great many functions, among those being the function of emotional expression.

Developmental Aspects

Physicians are faced with the necessity of rethinking their concepts and their techniques, as a survey of modern medical and scientific research demonstrates beyond question. It will be found, first of all, that the newest emphasis in nearly every field of research, from biology to psychology, from constitutional medicine to neuroanatomy, is on the importance of a careful study, not only of the parts, or even of their interrelationship, but of the organism as a whole.

More important still, there is experimental evidence in embryological and neurological research to the effect that the individual *acts on* its environment before it *reacts to* its environment. It has been shown that "cerebral growth determines the attitude of the individual to its environment before the individual is able to receive any sensory impressions of its environment." [78] The first spontaneous movements are stimulated by products of metabolism within the organism rather than by response to external stimuli. There is rather convincing evidence, moreover, that this factor continues to play a role throughout life.[93] More initiative should be attributed to the organism than has been customary when "speaking scientifically."

Furthermore, it has been proved fairly conclusively in the embryology both of the lower animals and of men that development progresses, not by means of the relating of reflexes to each other within a whole, but by means of individuation of partial patterns (reflexes) within the unitary whole. No reflex can be performed apart from a mechanism representing the total pattern of the organism.[79] Coghill, who is one of several to have published experiments making definite some of these facts, has said:[79] "Any theory of motivation, therefore, that attributes this function wholly to the environment is grossly inadequate."

More and more scientific data are being accumulated which support some psychosomatic principles originally developed more or less on a pragmatic or empirical basis.

Through this experimental material suggested so sketchily two facts appear: first, that the whole living organism in terms of both structure and function is something more than an aggregate of all its parts; and second, that an individual's actions are determined primarily not by environmental stimuli, but by the total pattern of his personality. A new definition of health results: the organism being primarily a unit, not an aggregate, normality requires that all parts be approximately subject to the organism as a whole; or, conversely, that the organism as a whole retain its power of activating the behavior of its parts.[70] Here is a basis, in scientifically proved fact, for the two historic approaches that have characterized medicine. The physician has been attempting to bring recalcitrant parts into subjection to the whole, and the psychiatrist has been attempting to increase the power of the organism as a whole over its parts.

Thus, the cross section of scientific thinking today demonstrates in rational terms that which history has illustrated in terms of experience: the possibility of two very different approaches toward the treatment of psyche and soma, although it suggests at the same time that they should not be too widely separated. And in spite of the fact that science has given recently a basis for therapy directed toward increasing the power of the organism as a whole, general medical techniques have not been developed with this goal in view. Physicians trained in scientific disciplines have been attempting to take over new techniques and aims from psychology, psychiatry, and the like, instead of attempting to develop further their own techniques.

The allied fields in social and public welfare devoted to the study of the environmental factors and background of the individual can contribute effectively in the study of the personality of the patient. Thinking along functional lines, the physician can gain greater insight into his patients' problems, physiological and psychological, whatever the approach.

On all sides, there is an awakening interest in psychosomatic relationships and a recognition of the fact that the patient needs help in adjusting to his environment and in learning how to modify it.

Increasingly studies are being made on the relationship of autonomic function to personal and social behavior of the individual. A study by Wenger[104] is illustrative. The study reports a preliminary test of the hypothesis that autonomic function is related to personal and personal-social behavior. On the basis of investigations made to date, certain inferences have been drawn concerning the nature of these relationships. Thus, the child with sympathetic predominance is believed to be emotionally unstable and impetuous, tense, restless, hyperactive, but more easily fatigued, insecure, dependent, and more likely to show compensatory behavior of any sort. On the other hand, the child with parasympathetic predominance is believed to be more stable, phlegmatic, independent, and retiring. The most decisive method of testing these inferences would be the method of differences (a) between means for groups manifesting extreme scores on the autonomic scale, and (b) between the mean of the Fels population and the mean of each extreme group.

Two groups of children, 6 to 13 years of age, were selected in terms of extreme autonomic scores and compared per 43 variables. The statistical data tended to support the author's inferences. Furthermore, "It was argued that, although poor environment can effect a decrease in scores of autonomic balance, there is evidence for believing that the range and level of variability in autonomic scores is genetically determined." In the main, the relationships of autonomic balance to behavioral and home environment variables are interpreted as sequelae to basic physiological patterns.

The relevant experimental work with animals has been discussed by Stainbrock,[103] among others.* He states that psychologists have studied in detail the rat's abnormal behavior pattern induced by noise. However, with few exceptions, these observers have been hesitant to consider the emotional aspects of this reaction. By refusing to say that rats can be frightened into disordered behavior, these research workers seek to avoid making the possible mistake of ascribing human emotion to these animals.

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* The work of Liddell Masserman, Gantt and others should be reviewed in this connection.

Stainbrock's review of the pertinent experimental data leads him to support the hypothesis that the abnormal behavior responses of the rat in the noise-fright situations represent an acute fear reaction which is associated with significant neurophysiological disorganization.

> "In general, then, it appears that the noise-fright reaction of the rat is associated with a fear-engendered neurophysiologic disorganization which is characterized by a hyperkinetic phase succeeded by a passive hypokinetic state which, in contrast to the electrically initiated and similar behavior, may be considered to have two components. One of these components is an actual neuromuscular dysfunction attributable to the abnormal neurophysiology associated with the acute fear-escape emotion and motivation, and this is apparently reproducible by electrical stimulation of the nervous system. The other component is a generalized inhibitory state which is concomitant with and endures longer than the neuromuscular manifestations of the catatonia. This generalized inhibitory state may be considered the psychologic aftermath of the acute fear reaction and is the final phase of the psychologically continuous reaction to acute fear."

The significance of the role of the autonomic nervous system as a vehicle for physiological expression of emotional states in man and animal is discussed. Drugs which are associated with an autonomic nervous system excitability facilitate noise-fright seizures in rats, and those drugs which tend to depress excitation may inhibit seizures.

The noise-fright situation represents an experimentally created acute fear-escape reaction which culminates in a generalized neurophysiologic disorganization. Stainbrock sees an analogy between this kind of behavior in the rat and some of the panic reactions of human beings to battle stress.

Cortical Functions

In certain disorders it may be desirable to interrupt or diminish cortical control through the use of hypnosis or drugs. Such procedures should be used discriminatingly, but can be not only a useful instrument of research, but also an effective therapeutic tool.

A review of the literature indicates that the most prominent pharmacologic effects are exerted on the central nervous system and are manifested chiefly by a change in the mental state of the patient characterized by drowsiness, euphoria, detachment, and willingness to discuss intimate personal matters. Also commonly observed are nystagmus, vertigo, staggering gait, dilated pupils, decreased corneal reflexes, and diminished reactivity to stimuli. Other pharmacologic effects such as alterations in the contractile state of coronary vessels, changes in body temperature, pulse rate, basal metabolic rate, and blood content of calcium, sugar, and chloride may be secondary to the action of the drug on the highest integrative function.

Illustrations of recent work along these lines are the following:

In a study by Wolberg[105] of six cases, an unconscious conflict was deliberately or accidentally produced during hypnosis. These conflicts were accompanied by certain somatic symptoms—in one case, by faintness, dizziness, muscular tremor, and irregular pulse. Later it was found that this was typical of the patient's response to disturbing life situations. Another patient reacted to the induced conflict by disturbance of taste sensation, nausea, stomach pain, and vomiting. The reaction in the third case was disturbance of motor response, generalized tremor, and anxiety feelings. The fourth patient's reaction was not of a general type, but specifically abnormal, while a fifth patient reacted with spasm of the leg. The conflict situation for the sixth took the form of a negative hallucination, in which he was unable to see the object which was the center of the conflict situation. In each case, the somatic symptoms disappeared when the conflict was resolved.

Ripley and Wolf[100] report on their experiences in using *sodium amytal* as an adjunct in the diagnosis, treatment, and in clarification of mechanisms in psychosomatic disorders of five hundred patients—four hundred in the Army and one hundred in civilian practice.

Enough of the drug was given to cause drowsiness and relaxation, but not enough to cause sleep or anesthesia. Dosage varied 0.1 to 0.8 gram. When the patient was under the influence of the drug, free association quickly revealed his most significant conflicts. Next the patient was questioned about relevant data which had been previously discussed with him in the preliminary history or during narcoanalysis. While problems were discussed and suggestive therapy was given, care was taken in handling repressed conflicts in order to avoid severe anxiety or depression. Subjects under the influence of sodium amytal are usually in a highly suggestible state similar to that induced by hypnosis, and often therapeutic use may be made of this state as is done with hypnosis. In addition, the examiner may in a short time gain information concerning the background and dynamics of the illness.

In many cases it was possible to rule out structural disease of the central nervous system by the disappearance of signs and symptoms when under the influence of sodium amytal. Cases mentioned were possible posterior fossa tumor, pseudo-parkinsonism, and post-concussion syndrome. Retention of symptoms does not always mean structural disease, as demonstrated by the case of a young pilot who had pain, weakness, and sensory loss of an hysterical type in his right arm and hand. Under sodium amytal the symptoms became worse but subsequently were cured after three weeks of psychotherapy.

Patients with tinnitus and deafness showed marked symptomatic improvement after sodium amytal, but not if these symptoms were secondary to otosclerosis or other structural disease. In many cases the cause of low back pain could also be clarified by noting whether or not pain and disability disappeared.

1. Distinction between functional disorders and malingering could be uncovered by getting information that the patient voluntarily suppressed.

2. In some patients the bizarre behavior, disorganized thinking, or hallucinations while under the drug helped in revealing the illness as a psychosis.

3. The mechanism of the action of sodium amytal and of the physiology of the disturbances manifested by the subjects was clarified.

Most subjects relax and are free from anxiety while under sodium amytal, but in some there is an increase in bodily tension, affect, and symptomatology. The patient's significant conflict often comes to the surface accompanied by an appropriate affect of anxiety or depression, and with this reaction there is frequently observed an alteration in physical manifestations. In certain conditions such as migraine, asthma, and hypertension, signs and symptoms disappeared while the patient was under the influence of the drug. In a number of these patients, while still under the influence of the drug, discussion of the problem which caused the emotional conflict would cause the signs and symptoms to reappear. Many case histories are given to demonstrate this point.

Individuals with pains of undetermined mechanism, usually back or abdomen, comprised the largest number of those patients successfully managed. Information gained about the psychodynamics of the illness was helpful in treatment. Problems recalled under the influence of the drug served as a basis for further analysis of emotional conflicts and personality reactions. In patients who were convinced that their symptoms were due to permanent injury or structural defect the demonstration of their functional nature was frequently of benefit.

In treatment sodium amytal was of greatest aid in those whose illnesses were of relatively short duration and in whom the dynamic factors could readily be identified. Those with chronic conditions in whom the dynamics were more obscure responded less well. The drug was especially valuable during World War II in the treatment of disorders which developed in combat or were precipitated by other severe environmental stress.

Brickner[71] in a paper on cortical function pointed out that recent studies with lobotomies, lobectomies, and epilepsy, have given evidence of the existence of a neuro-intellectual system. He writes of the:

> . . . "Neuro-intellectual" system which is in every way comparable to the neuromuscular and neurosensory systems, the essential difference between the systems lying only in their end organs and not in the central nervous system.
>
> An idea, in contrast to a muscular movement, is the product of neural activity without an intrinsic and fixed end organ, according to the concept advanced.

Hughlings Jackson[88] was the first to observe "spasm of thought," which suggested epileptic excitation or release of neurones of intellect. The abnormal states of thinking appeared to be mixed with the muscular component of the seizure. In more recent reports, cases of pure intellectual type and emotional phenomena were described.

> A certain idea or chain of ideas will repeatedly occur to the patient in much the same manner as a muscle contraction will repeat itself during a seizure. Clinically, such cases may sometimes bear resemblances to psychogenic, obsessive states, but the sudden onset of the attack and its equally sudden cessation, as well as the usually abnormal electro-encephalographic record, suggest a physiological mechanism of activation or release which can operate on intellectual neurones, and by so operating, can identify those neurones as discrete, real units.[72, 73, 80] The size and intricacy of these units have never been visualized or measured. The presumption is that they are often composed of large numbers of neurones, extending over considerable areas of the brain. . . . Thoughts, like movements or sensations, can appear as forced phenomena, occurring as a result of disturbance in the function of identifiable neurone beds.

Brickner[71] finds that these iterative states are often confused with obsessive or compulsive behavior. Close observation indicates, in his opinion, that the neural mechanism for "stereotypy of thought" and "stereotypy of motor action" may be the same. There is some evidence for this point of view in the literature.[88, 94]

Brickner describes an interesting experiment, in which repetitive action of speech was elicited. He states[71]:

> . . . The cortex of a 32-year-old right-handed woman was explored electrically in the manner of Penfield to determine a trigger point for her attacks. An area (termed "Area X") was discovered on the mesial surface of the left hemisphere low down in area 6, probably just above its junction with the posterior tip of area 32, about 8.5 cm. from the nearest part of Broca's area as measured with a probe passed through

> the designated zones in a formalin-fixed brain. It was slightly less than 1 cm. in diameter.
>
> When this area was stimulated, preservation of speech resulted. The patient was asked to say the alphabet. Upon stimulation of Area X, the letter being uttered at that moment was repeated until cessation of stimulation. The repeated letters were slightly distorted and the rate of production was, perhaps, slightly slower than usual. The patient knew she was repeating (indicating that other neural units of thought were acting simultaneously), but she was unable to control the situation.
>
> . . . Since, after Area X was excised to a depth of .2 cm., stimulation of the exposed white matter and of the cortical edges failed to reproduce the phenomena observed, it seems clear that here was a definite group of cells which could cause other distant cells to act repetitively, which, perhaps, activated the closed circuits mentioned above. This entire phenomenon can be analyzed not only in terms of repetitive neural activation, but also in terms of clinical states with repetitive behavior.

Brickner infers from these results that other areas in the cortex, controlling functional activities, such as muscular, sensory, or intellectual, would respond similarly. He feels that the neural explanation for the fixation of thought has not been emphasized enough. There is evidence to indicate that the locus for stimulation of the "neurones of intellect" lies in both temporal cortices.[74] Evidence from hypnotic experiments tends to support Brickner's findings.

Erickson,[82] in an interesting study, reports that a subject instructed under hypnosis to forget his age, 19, not only forgot his age in the posthypnotic stage, but the component parts of the number 19 as well. The subject was unable to recall number 9 for some time, and was unable to use the derivatives of the concept "nine" for their use. Erickson concluded that an isolated chain of neurones underlying the formation of ideas was inactivated in this instance.

Brickner speaks of the anatomical locus for the synthesis of complex intellectual units and states[71]:

> . . . One primary intellectual function of the frontal lobes appears to be the synthesizing of simple mental engrams into more complex ones.[75]
>
> Most of the strictly intellectual symptoms of bilateral lobectomy can logically be explained by the impairment of

> this one basic function. If this is true, the frontal cortex acts in a quantitative rather than a qualitative manner. The frontal lobes should not be considered as centers of intellectual localization, but rather as the organizers of the most complex intellectual units the brain can produce. They are the brain of the brain, so to speak . . .
>
> In this bilateral representation of thought, the neuro-intellectual apparatus compares again with the other systems; for bilateral representation is well known in the neuromuscular and neurosensory systems notably when the peripheral end organs are paired (right and left act as one). . . . Thus, the bilateral representation which is known to exist in motor and sensory systems also helps to clarify some of the phenomena which characterize the "neuro-intellectual" system. . . .

The excellent work of Grinker and Spiegel[86] with narcosynthesis in the Armed Forces is an example of how drugs can be used effectively as a research method and therapeutic aid. Although this work cannot be discussed here, it is relevant to cite, in part, what they state with regard to narcosynthesis:

> . . . It is difficult to specify definite time relationships for the administration of pentothal. Like every other part of psychiatric procedure, timing is a skill or art based on the therapist's intuition or 'feeling' for the particular problem. As a general rule pentothal should be first used only when the utmost has been obtained from the conscious patient—when the physician feels that the pathogenic material is not conscious and knows from experience that the subsequent insight will take a large amount of time. When resistances occur, pentothal may be used at that point.
>
> . . . We have stated many times that the emotional expressions evoked under the influence of pentothal must be considered usually as an abreaction, which is rarely curative in itself but is the necessary beginning to the attainment of insight. Subsequent interviews, interpretations and 'working through' are necessary in almost every case.
>
> . . . It was not the property of inducing an affective abreaction that led to the use of the term 'narcosynthesis' to describe the effect of pentothal. It was the fact that under the influence of the drug and during the process of abreaction, although not fully conscious, the ego, devoid of the stress of anxiety, synthesizes some and often much of the important isolated and pathogenic material into its main body.

The earliest approach to treatment of illnesses involving the central nervous system was almost completely in the manner of "cut it out": hypnosis, sedatives, lobotomy. Many patients show slight or temporary improvement when such techniques are used, but very often they become drug addicts or children leaning on the drug for support. Even in cases of amyotrophic lateral sclerosis or parkinsonism the course of illness is attributed to personality factors that are affecting the illness. There are many physicians who, discovering a parkinsonian syndrome will say this is organic and forget the patient. It is known that central nervous system disorders are affected for better or worse by a therapeutic regimen directed toward alleviation of the patients' pre-existing and perhaps still existing emotional conflicts.

PART II

CHAPTER IV

GASTROINTESTINAL SYSTEM

SIDNEY RUBIN, M.D.*

Introduction: General and Historical

Of all the organ systems, the gastrointestinal tract is chronologically the earliest to be studied by physicians from the point of view of the role played by emotional factors.

Manifestations of changed emotional states are expressed with greater facility by the gastrointestinal tract than perhaps by any other organ system of the body. Rather startling support for this statement comes from the realm of our everyday language. Our ordinary speech uses practically every mechanical and physiological process of the gastrointestinal tract to lend color and emotional "meaning" to otherwise indifferent expressions. A few examples will suffice to illustrate this: swallow abuse, eat dirt, vomit forth, digest orders, show guts, stomach people, penetrate the bowels of a problem. There are many others. The interrelationships between dysfunctions of the gut (the food-handling apparatus) and dysfunctions of the psyche (the emotion-handling apparatus) will be discussed in this chapter as they are observed in diseases of function and structure of the gastrointestinal tract. Such correlations are by no means new. Their history extends back from Osler to Hippocrates and represents an increasing percentage of the medical literature of the last several decades.

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* Menninger Clinic, Topeka, Kansas.

What is somewhat new, perhaps, is the application to these conditions of a rather newly developed body of knowledge, i.e., psychoanalysis. This new body of knowledge has brought together into a scientific discipline our understanding of emotional functioning. It is the intent of this chapter to apply principles of emotional development and functioning as elaborated by medical psychology to diseases of the gastrointestinal tract.

It is interesting to point out that as far back as 640 B.C., Hippocrates is stated to have cured King Perdicas of Macedonia of an organic symptom by the analysis of a dream.[114] The relationship of the nervous system to diseases of the gastrointestinal tract also leads back to hoary antiquity. But only recently, with the refinement of techniques made possible by scientific advances of the 19th century, has an experimental analysis of this relationship been made possible. Bochefontaine[113] in 1876 was among the earliest workers to study this problem.

In more recent years, with the work of Cannon,[77,116,117] Cushing,[119] and others, it has become clear that functions of the gastrointestinal tract are closely related to the activity of the autonomic nervous system, and that emotional manifestations of gastrointestinal activity are also closely associated with autonomic activity. Developmentally considered, it is interesting to note that in the original soma, the function of orientation to external influences as well as to internal influences was performed by a single uniform nervous system.*

Chester Jones and his associates[126] have published a comprehensive review of literature related to the gastrointestinal tract, covering the year 1937 and the first half of the year 1938. They stated that this literature must present at best a composite picture:

> "Owing to the complicated mechanism by which the digestive tract is controlled it is obvious that searchers after more or less isolated facts must frequently be at variance.

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* For a fuller discussion see Chapter V and Section 3 of Chapter VI.

The known variables involving the processes of digestion are becoming increasingly more numerous. Because of this fact it is more and more difficult to draw definite and lasting conclusions as to etiologic or physiologic processes.

"From the anatomicopathologic point of view little new has been added during the period covered, although there has been a constantly increasing number of observations on some of the rarer conditions. Observations based on clinical studies or animal experimentation obviously represent attempts to elucidate certain fundamentals, and discrepancies between individual investigations still serve to show how delicate and how involved is the motor and secretory function that has to do with the ingestion, preparation, absorption and elimination of food products. It is of interest that more and more scrutiny is being directed toward the relation between the central nervous system, the autonomic nervous system and the digestive tract. The importance of the psyche in its influence on digestive processes is being more clearly and logically presented. Applied pharmacology in relation to gastrointestinal physiology is increasingly productive of results, which are still, however, confused and at times discordant. Therapeutic methods are being revised on the basis of physiologic studies and clinical results, but, as usual, leave much to be desired."

Observations made during World War II have added considerably to our knowledge of this system. Halliday and Ruesch,[134] among others, have called attention to the socio-economic factors which may play a role in sensitizing any given individual to other factors known to create irritability in the gastrointestinal tract. For those interested, a summary of some of these observations is included as an appendix to this chapter.

Halliday[12] called attention to the fact that:

". . . the appearance of the stomach as seen by the gastroscope may depend on the inner emotional state of the patient at the time of examination, and that the findings of gastroscopy may be anomalous in the absence of psychological understanding of the patient.

". . . This was demonstrated in the morbidity statistics of the insured population of Scotland, when not only peptic ulcer but also neurosis, gastritis, rheumatism, etc., showed a remarkable relative increase as a cause of chronic incapacity. (Halliday, British Medical Journal, July 2, 1938). The upward trend of those affections may be attributed to the increase of the noxious factors of social environment during the period. There are reasons to believe that these factors affected males relatively more than females (see Mittelman, *et al,* in *Psychosomatic Medicine,* Jan., 1942)."

During the last decade a wealth of case histories has been accumulated which sheds further light on the psychodynamic mechanisms. Illustrative case histories are given at the close of several sections of this chapter.

Subcortex as Related to Gastrointestinal Tract

Some of the clinical and experimental evidence of the relationship of the subcortex to lesions in the gastrointestinal tract may be of interest.

In 1931, Cushing[119] described acute perforation of the stomach as a complication of operative procedures in the diencephalic area. He assumed that the physiological changes in the stomach leading to perforation were the effects of parasympathetic stimulation of the midbrain caused by the operation. Another observer, Light,[128] in accordance with Cushing's suggestion, was able to produce peptic ulcer by stimulation of this same area using pilocarpine. According to him, the parasympathetic irritation caused local anemia of the stomach which led to ulcer by diminishing resistance of the stomach wall to its own product, gastric juice.

These observations make it probable that at least some cases of ulcer may have not a local but a central origin. It appears established that chronic irritation of subcortical centers in the brain is able to influence local factors, secretion of gastric juice, the motility and the blood supply of the stomach wall. Theoretically, such changes as hypersecretion of acid or undernourishment of the stomach wall may be responsible for the development of ulcers.

The stomach, through local anemia, is weakened in its resistance against even normal concentrations of acid, or chronic hyperacidity may afflict the stomach wall even though its resistance is not specifically diminished. Although it is not yet clearly established whether the coincidence of both factors is necessary or one alone is sufficient to produce ulcer, it is sufficiently proved that both of the local factors can arise under nervous influence. The clinical observation of Cushing and the experimental observation of Light both point to the subcortical centers as a possible origin of this nervous influence.

Of course, irritation of the subcortical centers may have various origins. Light produced parasympathetic irritation artifically by pharmacological stimulation. In the cases observed by Cushing, this irritation was due to the mechanical factor of the operation. In the majority of the cases the irritation of the subcortical centers, which through the parasympathetic pathways disturbs the stomach functions, must have some other more ordinary origin.

There is interesting laboratory and clinical observation to indicate the effect of cortical activity upon the subcortical centers with consequent response in the gastrointestinal tract. In 1924, Bulatao and Carlson[115] discovered that the secretion of gastric juice following the injection of insulin can be abolished by the administration of an amount of glucose sufficient to counterbalance the hypoglycemia.

Furthermore, insulin does not augment the gastric secretion in a person with diabetes unless the blood sugar is in normal range when given. The increased secretion of gastric juice in response to insulin is, therefore, a part of the hypoglycemic syndrome. This fact would tend to place the origin of the action in the cerebral cortex. The stimulus would then appear to travel to the diencephalic centers with eventual progression to the stomach by way of the vagi. That this appears to be so is shown in experiments in which the vagi are sectioned. When this is done, the hypersecretion is abolished.[131]

Psychology of the Nutritional Process

Some of the anatomical and physiological details of the gastrointestinal tract which are useful to an understanding of this system as a "sounding board" for the emotions, have been reviewed. Among the many physicians and scientists who have made contributions to this field, Alexander,[107] perhaps, deserves special mention.

As a point of departure, a brief discussion of the psychology of the nutritional process would seem to be in order. Eating, probably more than any other vital function, plays a crucial role in the emotional development of the growing human organism. The satisfaction of hunger and the fear of starvation are of great emotional significance to the developing child. Hunger is associated with deep feelings of satisfaction, well-being, and security, while starvation becomes associated with a feeling of being unloved. For the child, therefore, feeding is equivalent to love. In fact, the sense of security and comfort associated with a full stomach is based on this emotional equivalence. This equivalence is called oral receptiveness.

Very early in the life of the infant, another emotional attitude of fundamental importance becomes linked with hunger and eating, and that is possessiveness. This attitude, with all its implications such as greed, jealousy, and envy, comes about because, to the child, possessiveness has the meaning of bodily incorporation, and vice versa. The thwarting of this possessive tendency and of the wish to receive leads to aggressive impulses, i.e., to take by force that which is not given, to take away from others something which the child wants.

In this way, biting becomes the first manifestation of hostility (oral aggression). Very early in the alimentary history of the child, both aggressive and possessive impulses center around the act of oral incorporation. It is therefore understandable that these impulses should become the origin of the first guilt feelings as soon as moral feelings and their consequences begin to develop.

Another aspect of the use of the mouth is related to sucking. These sensations arouse pleasure that is localized in the mucous membranes of the lips and tongue. The developing infant experiences most of his early pleasurable sensations in connection with suckling. He may try to reproduce these feelings by thumb sucking. These early oral pleasurable sensations derived from mucous membranes may become the precursors of later genital excitations. This early use of the mouth for instinctual gratification survives in adult life in the form of kissing.

In essence, the wish to be loved, strivings for security, the feelings of insecurity, possessiveness, greed, jealousy, and envy, all become linked with hunger and the process of nutrition. This indicates the close connection of emotional factors in disorders of the alimentary functions. Whenever deep emotions are repressed and blocked from expression through voluntary behavior, a state of permanent tension results and may exert a chronic disturbing influence on the different phases of gastrointestinal activity by way of the vegetative pathways. The asocial aggressive nature of these emotions is likely to result in environmental conflict and consequently, in repression.

The physically pleasurable sensations connected with early forms of nutrition indicate the close connection between the frequent emotional disturbances of the nutritional functions and repressed adult sexual functions when these become inhibited by conflicts. Repressed sexual cravings are expressed regressively by the eating process, and their rejection manifests itslf in eating disturbances.

Some facts usually unobserved by the general physician or pediatrician are useful for an understanding of the emotional background of neurotic eating difficulties with their sequelae in disturbances of the swallowing act, disturbances of the digestive functions, and disturbances of the eliminative act.

Neurotic Eating Difficulties

1. **Anorexia Nervosa.**—Anorexia nervosa is probably one of the best-known disorders related to disturbances of the appetite. The diagnosis is most often made when a loss of appetite is the outstanding symptom and particularly if no major psychosis is observed. This, of course, assumes the ruling out of possible organic etiological factors. Such a symptom, however, is simply the overt expression of a neurotic disturbance affecting the total personality. When the disease is severe, there may be considerable weight loss and emaciation.

The disease is considerably more prominent in women than in men, particularly in postadolescent girls. The differential diagnosis is not often easy; Simmonds' disease, particularly, is difficult to separate from anorexia nervosa.[132] In both conditions various symptoms of starvation are noted, basal metabolic rate is often low, there are disturbances of sugar metabolism, and amenorrhea is common.

One of the most valuable assets in an accurate diagnosis is a careful psychiatric anamnesis (medical and social history). It is obvious, however, that an attempt to establish definitely the primary causative factor is often useless because of a failure to evaluate the complex interaction between psychic and endocrine functions.

The refusal of the nipple by infants shortly after birth might be considered as possibly the earliest manifestation of anorexia nervosa. This might be thought of as a resistance of the developing organism against the adaptations required by the changed conditions of life after birth. This would seem to indicate a greater rigidity on the part of some organisms in the transition from interuterine to extrauterine existence. It has been suggested that icterus neonatorum might also be considered as a manifestation of the tardiness in adjusting to life, the liver in this case continuing its interuterine functions. Of course, many other factors may be involved.

Psychiatric examination of adults and children, where no other organic factor is present, reveals the underlying emotional factors relating to loss of appetite. Neurotic trends can be observed even by superficial psychiatric examination. Obsessive compulsive traits such as perfectionism, stubbornness, neatness, are common with their correlates of insecurity, sensitiveness, and overambitiousness. As early as 1874, Gull[124] recognized that psychological factors were of prime etiological significance in this disease. The underlying psychodynamic factors, however, were described in detail following the introduction of psychoanalytic technique.

Psychoanalytic study of these cases reveals tremendous unconscious aggressive impulses, with envy and jealousy, as a rule, playing the outstanding causative of the prodigious appetite. As is the case in all psychogenic disturbances of nutrition, however, bulimia is only one sympton of a general emotional disturbance of the entire personality.

3. Nervous Vomiting.—In anorexia the emotional factors elicited serve to inhibit the incorporative function. In nervous vomiting, however, emotional factors prevent the retention of incorporated food. Careful and thoroughgoing study of the psychodynamics in these cases usually uncovers extreme feelings of guilt, motivated by grabbing, aggressive, incorporating tendencies. The nervous vomiting here is the expression of these feelings.

In a sense, it corresponds to the urge to return that which the patient incorporates in his unconscious aggressive phantasies. Whereas the anorexia patient cannot take any food because of guilt feelings, the vomiting patient has to return the already incorporated food because of the aggressive symbolic significance of the eating act. The emotional background in this connection is one similar to that of neurotic disturbances of feeding and the therapeutic approach is consequently similar.

Temporary measures such as hypnosis, rest cures, and sedatives, are useful only when the chronic vomiting is so stubborn that immediate help is indicated. Obviously the elimination of the symptom itself does not necessarily mean a cure of the neurosis which may show itself in less conspicuous but equally significant symptoms, or in other behavior abnormalities.

4. Cardiospasm.—In anorexia, the eating habit is inhibited; in nervous vomiting, the incorporated food cannot be retained; in the esophageal neuroses, food cannot be swallowed; i.e., the act of swallowing itself is disturbed. In many cases, cardiospasm is the basis for this symptom.[136] Occasionally, a subjective sensation of a foreign body in the esophagus appears independently of eating (globus hystericus).*

The term cardiospasm was introduced by von Mikulicz in the 19th century. It designates a contraction of the lower end of the esophagus with a subsequent dilation of the proximal portion. Weiss,[136] in a study of a small series of these cases, has clarified some of the psychosomatic features. It is his opinion that there is undoubtedly a predisposition to the disturbance to which the psychic factor is complementary; it seems that both together are necessary to the development of cardiospasm.

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* See Chapter XIV.

On superficial observation, the condition appears to belong to the group of conversion hysterias and as such expresses the symbolic formula "I cannot swallow the situation." The dysfunction appears when an emotional impasse becomes apparent in regard to an external situation. Deeper observation, however, indicates that sexual, hostile, and self-punitive trends are of etiological importance. Weiss feels that the combined use of mechanical dilatation and psychotherapy is useful. In one case, dilatation was immediately followed by depression. This again illustrates the crucial importance of careful attention to the emotional factors.

Disturbances of Digestive Function

1. Stomach Neuroses.—In considering disorders related to disturbances of digestive functions, the stomach neuroses play an important part. The multiplicity of symptoms involving disturbances of secretory and motor functions of the stomach and duodenum form the basis for the diversity and variability in the clinical picture presented by patients with stomach neuroses. Differentiation between neurogenic (central) and organic (local) disturbances is hence difficult. The many disturbances commonly recognized as relating to faulty eating habits can be considered psychogenic. Incomplete mastication, fast eating, incomplete swallowing, and many other symptoms are generally thought of as being related to emotional disturbance. For example, overtaxation of the stomach by unhealthful eating habits may sometimes lead to local disturbances of the stomach, i.e., gastritis. These disturbances, combined with functional disturbances of nervous origin, are responsible for the variety and complexity of symptoms which make rigid differentiation between psychogenic and local etiology impossible, at least on the basis of our present knowledge.

The nervous disturbances of the stomach may range from slight distress after eating, heartburn, loss of appetite, to severe gastralgia and severe and intractable vomiting. The physiological bases for these symptoms are extraordinarily varied; among these are such dysfunctions as hypo- and hyperacidity, pyloric stenosis, and hypo- and hyperperistalsis.

Recent work, notably that of Wolf and Wolff,[139] has identified hyperemia, hypermotility, and hypersecretion, as an expression of hostile aggressive feelings when the patient was inhibited, and a return to normal as the patient came into his emotional security. It was clear from their work which considered primarily the conscious mental content, that there was a strong relation between the longing for security and hyperactivity of the gastric functions.

In depressive states, hypoacidity appears commonly and is noted frequently in connection with fatigue. A psychological background, similar to that described for peptic ulcers, has been noted in chronic hyperacidity. In general, in all patients suffering from psychogenic gastric disturbances, the repressed, possessive, receptive, help-seeking, dependent tendencies play a prominent role. A strong fixation to the early dependent situation of infancy is generally present. This dependency is not acceptable to the adult ego. The pride of the adult ego is hurt through denial of the wish for independence and self-assertion, and as a consequence the dependency feelings are repressed.[107]

It is common knowledge that the great variety of functional gastric symptoms are influenced by worries, fear, family quarrels, business and other reverses. World War II has demonstrated convincingly that continuous exposure to danger and chronic overfatigue are other causative factors. The common denominator in all these emotional tensions is the creation of an intense longing for rest, security, and help.

Accordingly it would seem that improvement of these nervous stomach symptoms could be most successfully obtained by rest, change of environment, and relief of emotionally disturbed life situations. While the patient continues to be exposed to traumatic life situations, little relief can be expected from any form of drug therapy. The same patient, in general, can dispense with all dietary restrictions and may recover quickly when on vacation or in a sanitarium.

Nevertheless, these so-called rest cures or other changes in life situations can only be considered as symptomatic therapy, because the underlying pathogenic disturbances have not been eradicated. For practical reasons most patients must pursue their ordinary activities and cannot remain long separated from their work or family responsibilities. Therefore systematic psychotherapy, directed toward the fundamental problems of the total personality, is indicated for all patients with a serious conflict. The stomach symptoms must be considered only as indicators of the underlying personality disturbance.[130] Continuing attention to the stomach symptoms alone, tends only to fix these symptoms and usually contributes to a perpetuation of the trouble.

2. **Peptic Ulcer.**—Peptic ulcer is the most frequent incapacitating disorder related to disturbances of digestive function. For many decades attention has been called in medical literature to the fact that emotional factors play a major role in peptic ulcer. They appear to be largely responsible for the chronicity of the disease. With the therapeutic resolution of emotional conflicts, the number of recurrences is greatly reduced. Recent studies serve only to confirm isolated observations reported for the years 1890 and 1900, in the work of von Bergmann[112] and Westphal,[137] and even earlier in the classic work of Beaumont in the period of 1825 to 1833.[111]

In peptic ulcer, the problem is a tissue change preceded by a functional disturbance of long standing. In this connection, Alexander[108] states:

> "In peptic ulcer cases, the pathological anatomical changes are the secondary result of the disturbed functions, and the disturbed functions themselves are the result of chronic emotional conflict.
>
> ". . . If formerly every pathological function was explained as the result of pathological structure, now another causal

sequence has been clearly recognized: pathological function as the cause of pathological structure. . . . Many clinicians, who are raised in the tradition of Virchow's principles, and still under the impressive influence of the simple and experimentally validated etiological discoveries of bacteriology, are not inclined to accept it without reservations.

"Usually, whenever a functional disorder is described, it is accepted with some doubt and the hope is expressed that further more precise histological studies will finally disclose tissue changes. The modern clinician is inclined to fall back upon the well proven classical concept that disturbed function is the result of a changed morphological substratum. . . .

" . . . Previously, the scientific *credo* in medicine was that further, finer histological studies would reveal an anatomical basis of all so-called functional disturbances; today we feel, without questioning the soundness of this principle, that in many cases a thorough investigation in the life history might reveal the functional beginnings of truly organic disturbances.

"In these early phases, the disturbance of function has not produced as yet necessarily histologically discernible organic changes. The resistance against this concept is based upon the erroneous dogma that disturbed function is always the result of disturbed structure, and on the disregard of the opposite causal sequence."

For some period of time, the literature has been enriched by contributions which indicate that certain types of persons are more inclined to peptic ulcer than others. Among those who have made contributions in this field are Alvarez,[110] Hartman,[125] and Draper and Touraine.[120]

The classic study of the emotional factors related to peptic ulcer was carried out under the direction of Alexander at the Chicago Institute for Psychoanalysis. Alexander states that at first there was the feeling that peptic ulcer tended to develop more frequently in one personality type than in others. However, early in their study these workers came to the conclusion that what was characteristic was not so much a certain personality type, but a rather typical conflict situation which might develop in very different personality types.

The typical conflict noted was between the wish to remain in the dependent infantile situation and pride and aspiration for independence, accomplishment, and self-sufficiency. The difficulty, therefore, expressed in other terms, revolves around the desire to be loved and cared for, and the rejection of this desire by the adult ego.

The conflicting tendencies reinforce each other in a rather characteristic fashion. Many ulcer patients show in their overt behavior aggressive, ambitious, and independent attitudes. They do not accept help and tend to burden themselves with all kinds of responsibility. This behavior is ofttimes considered characteristic of the successful business executive. Deeply hidden, however, is the person's unconscious longing for the sheltered existence of the little child. This dependent attitude must be carefully hidden and thus cannot find an expression in overt behavior. The more the patient strives for independence and to assume responsibility, the stronger is his unconscious desire for childhood satisfactions. This constantly increasing repressed longing. is the unconscious psychological factor directly connected with the organic processes which may lead to ulceration of the stomach or favor the development of ulcer when other factors are brought into play. This explains in part the dramatic therapeutic success often reported as a result of rest cures, during which the patient is able to throw off responsibility and acquire, in a way that seems legitimate, the care and attention which he craves. Sometimes following increase in symptoms or acute hemorrhage, the patient feels free to express his wish to escape responsibility. In a sense, the severe organic symptoms justify the flight and surrender. This sketch of the emotional structure and conflict of the person who develops peptic ulcer should be reviewed in the light of the mechanisms involved in the formation of this syndrome. In the preceding section, attention is called to the close association between nutrition and the wish for security, help, and love.

The desire normal in the infant to be taken care of and to be loved, is perhaps most ideally gratified in the seemingly parasitic situation of the suckling babe. The mother, whose feelings are correctly pictured by the term parasitic, instead of symbiotic, is inevitably frustrating, and may even make her child into a social parasite. Thus, early in life the emotional qualities of receptivity, the wish to be loved and cared for, become closely associated with the physiological functions of nutrition. Being fed thus becomes the primordial symbol of being loved.

Consequently, the repressed desire for love may mobilize the innervations of the stomach which, since early extrauterine life, have been closely associated with this primitive form of receiving. These innervations act as chronic stimuli to the stomach by way of the autonomic system and lead to its dysfunction and are independent of the ordinary organically conditioned stimuli, i.e., the need for food. Instead the origin for this bizarre innervation lies in emotional conflict, entirely independent of the physiological state of hunger.

In a sense, then, people who, because of the inner conflicts described, are unable to express themselves outwardly and are forced to repress these overstrong receptive wishes, ultimately bring these wishes to expression in the tacit physiologic language of the stomach functions. The stomach behaves in response to this stimulus as if it were taking or about to take in food. The more strongly the unconscious receptive wishes are repressed, the greater will be the unconscious striving for receiving help and love. Food, then, is wanted not for the satisfaction of hunger, but as a symbol for love and help.

Under this permanent chronic stimulation, the physiologic activity of the stomach is practically identical with that noted during digestion. One sees hypermotility, hypersecretion, and hyperemia, as a consequence. The empty stomach, therefore, is constantly being exposed to the same physiologic stimuli to which it is normally only periodically exposed, i.e., when it contains or is about to receive food. Some of the symptomatic manifestations of this chronic stimulation are epigastric distress, heartburn, and belching, with the possible ultimate end result of ulcer formation.

This point of view has received confirmation from the brilliantly conceived and executed experiments of

Wolf and Wolff.[139] Their observations in this field may be summarized as follows:

1. Acid secretion is continuous in small amounts.

2. Periods of hyperemia, hypersecretion, and hypermotility occur spontaneously.

3. Coincident with fear, ischemia of the mucosa, inhibition of acid secretion and decrease in contraction occur. (Similar to dominance of sympathetic nervous stimulation.)

4. Hostility, anger, and resentment are accompanied by hyperemia, accelerated acid secretion, and hypermotility, leading to engorgement of the gastric mucosa resembling "hypertrophic gastritis." (Similar to dominance of parasympathetic nervous stimulation.)

5. Sustained emotional conflicts are associated with increased severity and duration of engorgement, hypermotility, and hypersecretion. Under these circumstances the slightest trauma results in hemorrhages and erosions; pin point hemorrhages occur even spontaneously from vigorous contractions of the stomach.

6. Contact of gastric juice with small erosions accelerates production of acid and intensifies engorgement. Ulcers are found when this condition is prolonged.

7. An efficient protective coat of mucous insulates this lining of the stomach and permits prompt healing of small erosions. The mechanical removal of this protective covering in the duodenum may explain higher incidence of ulcer in this region.

8. The overactivity of the stomach, associated with emotional conflicts, starts a chain of events which may culminate in ulcer formation.

Among internists, the chronic stimulus of the empty stomach has for some time been considered one of the etiological factors in the formation of peptic ulcers. This point of view is maintained by Alvarez.[110] An interesting, though unconfirmed observation of Silbermann[135] is worth noting here. He prepared dogs with artificial esophageal fistulas, so that food swallowed by the animal emerged by way of the fistula and fell to the floor. The dog snapped it up again and repeated this procedure for as long as three quarters of an hour. This powerful stimulation of the gastric secretion of the empty stomach led regularly, according to the author, to ulcer formation.

In many respects, the situation with the ulcer patient is similar: his stomach remains in a state of chronic stimulation which is not a result of eating, but which is a consequence of the repressed desires to be loved, to receive or to take aggressively that which is not given freely. When those tendencies are excluded from their normal outlet by voluntary action, they discharge themselves by way of the vegetative system. This wish to be loved which has, as we have seen, become equated with the wish to be fed, serves to stimulate the stomach function by way of the parasympathetic pathways.[*]

Hence it would seem that the local condition of peptic ulcer is the end result of a long process at the beginning of which are emotional conflicts. It would seem reasonable that the basic point of attack would be on these underlying conflicts. This by no means implies a neglect of the local condition itself; in fact, this should be the first therapeutic concern.

Psychotherapy is most useful as a preventive measure. The longer or briefer period of functional symptoms before development of ulcer is the most favorable time for psychotherapy. Chronic hyperacidity and other stomach functions should be regarded as the first warning signal of disturbance of stomach function. In the presence of these, concentration on local symptoms and neglect of the personality factors is an error.

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[*] Studies on the cephalic (psychic) phase of gastric secretion have been carried on by Wilhelmj, McCarthy, and Hill. In a brief study it has been shown that the presence of tenth-normal hydrochloric acid in the stomach and in the upper portion of the intestine causes definite inhibition of the intragastric chemical and intestinal phases of acid secretion. In most instances these authors are able to show that the psychic phase of acid secretion can break through the inhibitory effect produced by the rate of acid secretion. The secretory energy of the psychic phase of secretion seems to be responsible for a degree of hyperacidity unattainable by the other two phases alone.

By far the most conclusive attack on the subject of histidine therapy is that of Sandweiss: "Of a series of 291 patients with proved ulcer, 118 we re-treated with various forms of parenteral injections (histidine, vaccine and emetine); the remainder were treated by orthodox diet-alkali measures and served as controls; distilled water was administered to a large group of controls (22 patients)." From the results obtained Sandweiss concludes that in cases of chronic ulcer, parenteral therapy was of value when the patient failed to respond to diet-alkali management. In this group "parenteral therapy has its chief value as an additional method of treatment." *He feels that the psychic factor is largely responsible for the favorable results when they occur.* (F. D.)

Where peptic ulcer has developed, therapy should be directed both toward the local condition and the underlying conflicts. The best approach to these underlying emotional factors would seem to be by way of psychoanalytically oriented psychotherapy.

Disturbances of Excretory Function

Next to eating, the function of excretion plays perhaps the most important role in the emotional life of the infant, although it acquires emotional overtones slightly later in the infant's chronological development. Literature contains many references to the psychological aspects of these functions, but the recent work of medical psychologists has served to outline them more clearly. A tremendous psychoanalytic literature has been accumulated covering a period of about thirty years.[106, 121, 122]

The incorporative function of eating symbolizes the wish to receive or take by force that which is not freely given. The eliminative act, on the other hand, becomes connected with emotions of possessiveness, pride in accomplishment and giving, or it may become an instrument of hostility used to attack, soil, and disparage.

Probably the earliest pleasurable sensation for the newborn infant is sucking at the breast. This is soon supplemented or replaced by thumb sucking. This substituted pleasure, however, is soon checked by the adult.

Seeking another substitution, it is not long before the child becomes aware that a similar pleasurable sensation can be produced at the other end of the alimentary tract by the retention of feces. Here also a solid body is used as an irritant of a mucous tubular organ. This pleasure has the additional advantage of making interference by the adult more difficult. The pleasurable excremental act soon becomes symbolically equated with a sense of independence from an interfering, dominating world.

Nevertheless, during toilet training the child loses this newly found sovereignty. He is urged by parents to engage in excremental acts only at regular intervals, i.e., to comply with wishes of adults, or from the point of view of the infant, to comply with the wishes of the world.

In exchange for this compliance, the child receives praise, love, and in some cases even material goods, maybe a piece of candy. In this way, the excremental act first becomes associated with the concept of possession, and its close relation to money can be easily explained on this basis. From this point of view again the child can evaluate every excremental act as a donation to adults. This concept is often reinforced by the great interest many mothers take in their children's excrement.

It is easy to understand how, to the young infant, the excrement thus becomes considered a valuable possession, a source of pleasure, and something which can be used as a medium of exchange for other goods, in other words, how the infant's attitude may become coprophilic. This attitude, however, is soon broken by educational procedures, and with it the attitude toward excrement becomes changed into one of disgust and depreciation.

In this sense the excrement becomes a soiling weapon and the act assumes a depreciatory significance. Here is the basis for the sadistic, aggressive, and soiling connotation of the excremental act. The emotional attitudes described, of course, more or less disappear from the conscious personality in later life. They remain, however, deeply rooted in the unconscious and often appear as neurotic symptoms of mentally disturbed patients and even in dreams of healthy people. For these reasons. the excremental act may become connected with the feeling of accomplishment, of giving or attacking, soiling and deprecating, and also with the sense of possessiveness.

1. Chronic Diarrhea, Spastic and Ulcerative Colitis.—In discussing the disturbances of the eliminative functions, the clinical conditions of chronic diarrhea, spastic colitis, and ulcerative colitis will for the sake of brevity be considered together.

While it seems fairly obvious that emotional factors are connected with all the conditions mentioned above, it is within the realm of possibility that chronic diarrhea and spastic colitis may be considered as the functional precursors of mucous colitis and ulcerative colitis, respectively. It is not entirely clear to what extent emotional factors are an aggravation of underlying local disturbances and to what degree they are of major etiological significance.

It is generally assumed that chronic diarrhea may be symptomatic of both organic and neurotic disturbances, which may be coexistent. It is not always possible, consequently, to distinguish clearly the individual roles of neurogenic or local pathological factors. Simple chronic diarrhea is commonly the bodily expression of a psychoneurotic condition, and occasionally it is the central symptom of such a condition.

Many patients react to diarrhea with worry and anxiety. Their concern about it becomes an issue of their daily lives. In general, patients can discover a connection between the onset and the emotional tension, but, of course, the onset is commonly ascribed to dietary transgression.

2. **Mucous Colitis.**—Mucous colitis has been long thought of as a neurosis. Recent work, notably that of White, Cobb, and Jones,[138] indicates that the disordered physiology here is brought about by way of overstimulation of the parasympathetic system. This overstimulation in a great majority of cases is thought to be the result of emotional tension. These writers describe the personality trends of the patient as indicating overconscientiousness, dependence, sensitivity, anxiety, guilt, and resentment.

Patients suffering from chronic diarrhea and spastic mucous colitis show a rather typical conflict about their strong demanding (oral aggressive) and receptive wishes. They have the wish to compensate for these dependent urges by activity, substituting, however, attacks of diarrhea for real activity and accomplishment.

The patient has in addition the unconscious emotional desire to give as compensation for all the things he wishes to take away or to receive. This desire manifests itself generally in worry about certain duties and obligations. He feels called upon to make strenuous efforts at work. There is a tendency to give money and support to others. The patient consequently develops a reputation for overconscientiousness.

Simultaneously there is a violent reluctance toward self-exertion, toward engaging in systematic effort, and toward fulfilling the obligations he feels compelled to assume. In these feelings we see the strong tendency to give and to make restitution for that which is repressed. There is the hidden desire to become dependent on others, with the conflicting feeling that he should give compensation for all he receives; but instead of giving real things or accomplishing something real, he satisfies these inner demands by an infantile form of gift, the intestinal content.*

These patients contrast markedly with the peptic ulcer patients. Here also there is a marked tendency to overcompensate for underlying passive and receptive wishes. The overcompensation, however, takes the form of real exertion, efficient work, and aggressive independent behavior. The diarrhea patient overcompensates for his passivity wishes only by the unconscious symbolism of the excremental act. This act then becomes an emotional substitute for performance, accomplishment, gifts and obligations to others.

As has been described, the physiological basis of such emotionally colored diarrhea is the chronic excitation of the peristaltic activity of the bowel by way of the parasympathetic system. The tendencies toward giving and accomplishing arise as overcompensations for strong receptive and taking tendencies. These tendencies when repressed and prevented from voluntary expression seem to have a specific influence on bowel function. In addition to the giving and accomplishing tendencies described, hostile impulses are felt by the patient and contribute to the development of guilt feelings. The wish for restitution here also may have a direct effect on the intestines.

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* Erich Lindeman, who has done extensive work in this field, has made the comment that these patients sometimes go into a marked, sometimes suicidal, depression when separated from the loved object, the person for whom such gifts are intended. He notes that in the typical colitis patient "where the compulsive mechanism is strong, the patient loses his normal behavior pattern when he loses the person who has meant the most to him." This is true whether the loss is occasioned by death or by disillusionment. The psychiatrist may then play the role expected from the lost person for a while. Otherwise these patients are likely to kill themselves one way or another. He finds that many patients with acute colitis get relief in three days, if the doctor plays an appropriate role.

Similar conclusions were reached, independently, by Groen. See Chapter IV, Appendix I. (F. D.)

In women the conflict related to giving and receiving often centers about pregnancy. Giving birth to a child is obviously the most creative function of the female organism. The patient rejects pregnancy and the diarrhea tends to serve as a substitute for the dreaded act of giving birth.

As in other conditions already discussed, the primary therapeutic concern in these conditions must be directed to the emotional disturbance itself. However, dietary therapeutic measures may be of benefit. As with all other organic neuroses, rest cures and sedatives may help to alleviate some symptoms, but such measures are only palliative and psychotherapy is necessary to remove the basic cause and prevent recurrence.* Studies indicate that after such treatment, dietary regulations and medication can usually become unnecessary. It is important to note that here as with other disturbances, refractory examples are encountered which cannot be helped either by psychotherapy or by other methods. There are some indications that successful treatment of refractory ulcerative colitis may be accomplished by psychoanalysis.

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* Chester Jones states that "The importance of considering psychologic factors in the treatment of peptic ulcer has been frequently noted." Two intelligent papers have been written on this aspect of the problem recently. Chappell, Stefano, Rogerson, and Pike carried out an interesting experiment on a group of patients with ulcer. In addition to routine dietary measures, evening lectures were given to these patients in order to improve their understanding of such factors as worry, expenditure of effort, psychosomatic relation, and self-assurance. A control group was handled by dietary measures alone. Over a three-year period the first group of patients responded to treatment better in every way than did the control group, and even those who suffered from relapses during this period were able to handle their symptoms more satisfactorily.

The paper by Davies and Wilson provides a convincing demonstration of the psychic element in the development of peptic ulcer. A series of 205 patients with ulcer were carefully examined psychologically, and it appeared that in 84 per cent of the cases the symptoms began shortly after some event affecting the patient's work, his finances, or the health of his family. One hundred of these patients were compared with an equal number of patients with hernia, Culpin's system of group scoring being used. It was found that a significant majority of the patients with ulcer showed undue tension long before the symptoms of ulcer developed. The conclusion that successful therapy depends on attention to the "whole man," his work and his anxieties as well as his diet, if not original, is nevertheless of great importance, since even a superficial survey of the literature reveals innumerable conclusions as to the specificity or importance of various therapeutic maneuvers, with a fine disregard of the known history of this chronic disease. (F. D.)

3. Chronic Constipation.—Chronic constipation is another manifestation of disorder of the eliminative function frequently having a large emotional component. This condition must be distinguished from the constipation observed in spastic colitis. Although constipation may be a manifestation of various organic conditions, in general the psychic component looms large. The psychological findings are fairly typical. These patients tend to be defeatists and pessimists. They show a distrust and lack of confidence regarding other people. The idea of being rejected and not loved is fairly common. These attitudes in an exaggerated form are commonly seen in paranoia and severe melancholia. In this connection, Menninger and Alexander[109] have reported that a very large number of patients suffering from persecutory delusions are severely constipated. Melancholia patients commonly show a conspicuous tendency toward constipation.

The emotional formula of these patients might be "I cannot expect anything from anybody. Therefore I do not need to give anything. I must hold on to what I have." This possessive attitude which is the outcome of feelings of rejection and distrust is manifested organically in constipation; that is, the excrement is retained as a valuable possession, in accordance with the early coprophilic attitude of the child.

Somewhat more hidden is the unconscious aggressively deprecatory and hostile attitude toward others, which in general may be regarded as reaction to feelings of rejection. These feelings are deeply repressed and inhibited. This inhibition and repression extends over to the excremental functions, with the consequent appearance of constipation. In other words, the patient is inhibiting the strong unconscious tendency to soiling which has the significance of hostile attack.

From the point of view of therapy, the symptomatic approach to constipation by dietary measures, enemas, massage, may suffice for practical purposes. On the other hand, where the symptom is a manifestation of deep-seated emotional disturbance, psychotherapeutic procedures, aiming to uncover unconscious conflicts, are beneficial and have shown good results. Long-standing constipation is often relieved by psychotherapy. Where constipation is only one manifestation of a deeper-lying disturbance in the patient's emotional make-up, treatment to be effective must be directed toward a reorientation of the total personality.

CONCLUSION

Relationships between the emotional function of people and the functioning of the gastrointestinal tract have been outlined. Various connections have been made between disordered function of the psyche and disordered function of the gut. The point has been made that emotionally influenced dysfunction of the gut can lead to alteration and eventual destruction of tissue of the gut.

The considerations here presented do not indicate a new concept nor do they imply the development of a new specialty. They simply tend to emphasize that adequate treatment by every physician, be he specialist or general practitioner, means treatment of psyche and soma. In some cases, more specialized techniques may be necessary. Family physicians have always known that treatment of an illness means the treatment of a *person* with an illness. For example, Mrs. Smith's poorly baked biscuits might be a cause of Mr. Smith's indigestion. But Mrs. Smith's failure to cook supper *at all* might be an equally potent cause for Mr. Smith's indigestion. The physician should be prepared to deal with both situations.

Appendix 1, Chapter IV

PSYCHOGENESIS AND PSYCHOTHERAPY OF ULCERATIVE COLITIS

J. GROEN, M.D.*

Introduction

Ulcerative colitis is a serious disease in which part of the colon is covered with a large number of ulcers. In the severe cases the tissue defects may be so great that there is hardly any normal mucous membrane left between the ulcers. The clinical signs are the following: fever, diarrhea with admixture of blood, mucous, and pus, emaciation, anemia, dehydration, and exhaustion. The disease usually has an acute onset and a chronic or intermittent course. Unexpected cures occur as often as unaccountable aggravations. The mortality is considerable.

The cause of the disease is unknown. A bacterial agent would seem likely, on first impression. All these bacteria, however, have not ultimately satisfied the postulates of Koch; they were not found in all cases; they also occurred in normal individuals. The etiology of the disease remained unestablished.

In 1930 Murray[142] drew attention to the peculiarity of character and the occurrence of psychologic conflict situations in the histories of his cases. Sullivan (1932)[143] and his co-workers continued the work along these lines. In 1938 van der Heide[140] was given an opportunity to interview a number of our patients with ulcerative colitis in the Wilhelmina Gasthuis at Amsterdam. He was able to demonstrate the presence of emotional disturbances in all of them. He observed further that these disturbances were of a similar nature in all these cases.

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* Chief of Internal Medicine, Wilhelmina Hospital, Amsterdam, Holland.

As a physician without psychoanalytic training his method of approach has been different from those of his predecessors. Yet the results so far have been in astonishing agreement with those originally obtained. It is the purpose of this paper to report on a number of cases of ulcerative colitis in which special attention was paid to the character of the patient and to the emotional situations he had gone through before the outbreak of his disease.

Methods

The methods used in the present investigation have been the same as those employed in history-taking. An attempt was made to obtain a picture of the character of the patient by taking a very elaborate anamnesis in the form of a detailed life history. A special search was made to find out what exactly had taken place in the emotional life of the patient shortly before onset or recurrence of his disease. By comparing these data thus obtained, an attempt was made to discover similarities in the character, or analogies in the emotional conflict, of these people.

As the histories in these cases often went back as far as early youth, and often assumed the character of a complete biography, the method might be called biographic anamnesis. It differs from psychoanalysis in that it does not rely so much on free association. Neither does it use dream analysis. It is the examiner who, in general, controls the conversation and sees that the history is related, as far as possible in chronologic order. The "biographic anamnesis" has the advantage, moreover, of being less time-consuming than an analysis.

The Character Structure of the Ulcerative Colitis Patient

The intellect is generally well developed.

Carefulness and neatness, often exaggerated, are striking features of their personalities.

These patients are extremely sensitive, even oversensitive.

They often display a hesitating, unbalanced attitude toward the value of their own personality.

These patients are extraordinarily egocentric.

In general their attitude toward life is a passive one. They are usually ambitious only in a limited degree.

They are fearful, and when in imminent danger often overtly cowardly.

In most, but not in all, there is a striking lack of aggressive tendencies in behavior.

These patients have a great need for love, sympathy, and affection, harmonious surroundings full of love and attachment.

The patients often have an exaggerated, idealistic, sometimes a positively naive, infantile conception of love.

In all our male cases the history revealed an abnormally strong fixation on the mother, often combined with fear of the father.

At first it is somewhat difficult to induce these patients to speak about their inner life.

Emotional Conflicts Preceding the Outbreak of the Disease

Individuals with a character structure as described above may live for a long time without great disturbances. It is true that they are limited personalities, but disturbances need not per se develop. Nothing abnormal will happen so long as the external circumstances are such that they suit the patient.

It is clear, however, that such a sheltered life may easily be upset. In all our patients, shortly before the outbreak of their colitis, a difficult situation that required an active solution had taken the place of the former sheltered condition. The patient, however, was not able to get out of the difficulties himself by making a decision or taking action. Sometimes the very fear of getting into a difficult situation had led to an inner conflict.

Thus, in our cases, owing to some external reason, a situation arose with which the patient could not cope and from which he could not escape. This situation resulted from an emotional trauma which involved a combination of acute love-loss and painful humiliation. It persisted in the unconscious as long as the conflict was not solved. It was repressed because there was nobody to whom the patient dared or could confess his difficult situation. The problem was illustrated by six case histories in detail which emphasized the characteristics of this syndrome.

The Conflict Situation

The character in itself was not enough to produce ulcerative colitis; in all these cases an acute emotional conflict situation had clearly preceded the outbreak of the disease. None of the patients had admitted their defeat, but secretly had worried a good deal.

The conflict situations in all these patients have something analogous. There arose at a certain moment a situation of an acute love-loss. The patients were suddenly deprived of loving cares with which they had been surrounded. Simultaneously these patients, who already doubted the value of their own personality, had to suffer a humiliation of their innermost pride and self-respect, in a constellation in which they failed as a man or as a woman. Common to all these conflicts was also the abrupt, harsh, almost rude way in which all this took place. Thus a narcissism, which had up to that time been artificially nursed and sustained by the cares of a mother or father, or mother-or-father substitute, was acutely offended.

Not only the nature of their conflict, but also their attempt at solving it, was similar in these patients. They tried to evade it in a manner that was in accordance with their character. The repression of this special kind of defeat, the outwardly "normal" behavior, the finding of a pseudo solution, while insufficiency of their own personality had been so rudely revealed to them, the carrying on while they were standing in life helpless, loveless, and without confidence in their own personality—all this appeared to belong to the typical reaction of these personalities.

Therapy

The treatment in these cases consisted of two parts. The first was an emotional catharsis that was not so detailed as would have been the case in a regular psychoanalysis, but which relieved the patient noticeably. The second, constructive part of the treatment was confined to simple encouragement of the patients.

The question is whether the author has been right in applying psychotherapy in the way he did. If by treatment is meant a removal of the symptoms, the method has undoubtedly been successful. But if treatment is understood as an analysis of the disturbances in the emotional life, followed by a normal reintegration of the personality, then the therapy in these cases was very primitive indeed. It is left to others to decide whether the doctor acted rightly and whether it is preferable to suffer from a colitis than from an uncured neurosis.

It is not to be wondered at that the author, who for so many years felt powerless against the problem of ulcerative colitis, has become convinced that psychosomatic medicine provides us with an explanation of the cause as well as with a method for the treatment of this disease.

Psyche and Soma

Many cases of colitis will yet have to be examined to confirm whether a psychic etiology will also apply to other cases. Moreover, it has to be proved that the mental constellation described above is specific for colitis, that it is not met in healthy people. When a sufficient number of investigators have published their experiences, it will then be possible to state with certainty whether ulcerative colitis is always a psychogenic disease.

The examination and the treatment of patients suffering from ulcerative colitis requires, therefore, not only technical but also psychological skill from the physician.

There is another question. Our emotions find their organic basis in the central nervous system. How is it possible that a disturbance which, if localized in the body at all, we are to locate in the midbrain can cause a disease in such a faraway organ as the colon? Along what pathway does the disturbance reach the colonic mucous membrane? Are there any experimental data to prove such an influence of emotions on the colon to an extent that they may give rise to severe organic changes such as bleeding ulcers?

On analogy it is conceivable that a chronic fear might cause chronic diarrhea. The stimulus would reach the intestine from the central nervous system, probably, the diencephalon, via the vagal nucleus and nerve and the autonomic nervous system.

Lium[141] transplanted part of the colon of dogs into the abdominal wall and administered to these animals parasympathomimetic (vagotonic) drugs (pilocarpine). This caused a strong spasm of the colon. During this spasm the mucous membrane became ischemic. If the ischemia lasted long enough, hemorrhages and erosions appeared. Thus it may be that in conditions of chronic anxiety, giving rise to prolonged spasms of the muscles of the colon, ischemia results. The spasm of the muscularis and of the muscularis mucosae will interrupt the blood supply through the vessels that run from the serosa to the mucous membrane and penetrate perpendicularly through the layer of muscles on their way. To this may be added a constriction of the vessel wall itself. The ischemic patches of the mucosa thus formed may give rise to small necrotic lesions of the epithelium, from which, on relaxation of the spasm, bleeding will occur. But the spasm does not subside completely, so that the epithelium is insufficiently supplied with blood. Therefore, healing is attempted but is not complete. Only when the spasm disappears and the blood supply becomes normal again can the mucous membrane regenerate. This would make it clear how aggravations and cures may take place very rapidly in colitis. The theory also gives a certain anatomical substratum to the effect of our psychotherapy, although we are still far from having a complete insight into the long chain of cause and effect that forms the link between an unsolved emotional conflict situation and the anatomical changes in the intestines.

The fact that the pathogenesis is not completely understood does not provide an argument against the psychologic etiology of ulcerative colitis.

SUMMARY

The author describes six cases of ulcerative colitis. Special attention is paid to the character structure of the patients and to the emotional conflicts that preceded the outbreak of the disease. The author comes to the conclusion that patients with ulcerative colitis seem to have certain character traits in common which cause them to react to certain external situations in a similar way. It was demonstrated that every onset or recurrence of the disease was preceded by an emotional trauma which had produced a specific internal conflict in these patients. The specificity of the conflict was formulated as an acute love-loss, combined with a humiliation, which made the patient feel his inferiority as a man or as a woman. None of the patients had been able to solve his or her conflict, but had continued to be grieved. The author suggests that the presence of this specific type of unsolved emotional conflict in patients of this character is the cause of the disease. Four of the six cases improved after a simple form of supportive psychotherapy.

CHAPTER V

VASOMOTOR, TROPHIC, ORAL, AND SKIN DISORDERS

SKIN AS AN END ORGAN OF SOMATIC EQUIVALENTS OF PSYCHIC PROCESSES

E. SCHNEIDER, M.D.*

The following introductory review of the literature is taken from Dunbar, *Emotions and Bodily Changes.*[3] In some instances, a word or a phrase has been changed in order to make the meaning clearer. The direct quotations are indicated.

In 1927, W. T. Sack[168] pointed out that the skin affords an especially favorable field for the study of psychosomatic relationships, particularly since here all voluntary innervation seems to be excluded. In attempting to clarify the concept of the significance of the skin as an end organ of somatic equivalents of psychic processes, it is important to define what is ment by the skin as an end organ of expression. Sack defines "expression" as "every somatic process which is unequivocally related to a definite psychic process, irrespective of whether it is due to voluntary or involuntary innervation. These phenomena have a twofold significance; *reflex,* springing from the deep strata of the unconscious to alarm the conscious mind and attract the attention of the individual; *demonstrative,* that is, directed toward the social environment to derive there notice and attention."

"In speaking of the skin as an organ of expression, it is important to remember that the skin is not experienced as the system of layers which we know from the histological section, but often as a point of sensibility to a situation involving cold, heat, pain, burning, itching, sexual pleasure, all sorts of unfavorable idiosyncrasies, and all the qualities of the sense of touch; and again from the aesthetic point of view as beautiful, ugly, pure or impure, pale, red, smooth," or finally as "the boundary of the body and its environment." Since the skin is "a means of communication between the inner and outer world, and vice versa, it is undoubtedly that part of the body which disappears least readily from consciousness. There is almost no preoccupation with the body unaccompanied by optical, sensory, and aromatic experience of the skin. Obviously, this organ, through its exposure, must play an important role in the mechanism of expression."

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* Presbyterian Hospital, New York City. Assistant in Dermatology, Vanderbilt Clinic; Research Assistant in Psychiatry, Columbia University.

Psychodynamically, the skin is of particular interest because of its importance as an erogenous zone. In an article written in 1912, J. Sadger[169] pointed out that "although skin, mucous membrane, and muscle erotism usually occur together, we observe many cases of pure uncomplicated skin erotism. Experience has demonstrated the peculiar fact that carbon dioxide baths should not be given to individuals who are sexually very excitable . . . because this potent skin stimulus acts like an aphrodisiac. In subjecting hysterical individuals to cold hydriatic procedures it has been observed that some patients cannot get enough of it, whereas others are harmed by it, though reacting very favorably to hot water application. Whence comes this curious phenomenon? Sadger thinks that cold and heat can stimulate skin erotism in a way which differs from individual to individual. Thus, depending on the erogenous make-up, some individuals become cold-water fanatics, whereas others avoid cold water like a pestilence and become hot-water enthusiasts. Similarly, cool as well as warm air is often stimulating to the skin and mucous membranes. Perhaps the ability of loved ones to blow away children's pain has something to do with this skin erotism." In the same way, warmth, light, and cold, simple stroking of the hand or therapeutic application of electric current has a sexually stimulating effect on many people.

"The most intimate connection with the sexual life is seen in that modification of skin sensibility which we call tickling. One evidence, among others, of the sexual nature of this sensation is seen, for example, in the fact that many languages have only one word for tickle and cohabit. Idiopathic pruritus, which we know in generalized and localized forms, is mainly restricted to erogenous zones, occurring most frequently as pruritus vulvae, scroti, and ani. The sexual nature of this itching is indicated in the facts that it occurs with predilection in the menopause, that it becomes worse with the warmth of the bed, and that scratching during the attacks of itching is markedly pleasurable. Jacquet speaks of an *onanisme pruritique*. A strong skin erotism is indicated in many people in whom the itching of an actual dermatosis persists even long after the original process has entirely subsided."

In endeavoring to prove an interrelationship between psyche and skin phenomena, the early workers in the field resorted almost exclusively to hypnosis. In 1906, Doswald and Kreibich[148] "produced blisters by hypnotic suggestion under carefully controlled conditions. . . . The blisters required considerable time to heal and left scars." Many others repeated this experiment with comparable results. In 1928, "Heilig and Hoff[154] taking as a point of departure the fact that many individuals regularly develop herpes labialis after unpleasant emotions, investigated this question experimentally in three such individuals. These patients . . . were reminded in hyponosis of an unpleasant affective situation and at the same time the itching of an incipient herpes was suggested to them. In one or two days herpes developed. . . . The mere suggestion of the development of herpes even in detailed and emphatic form was not enough to produce the lesion unless unpleasant emotional situations were suggested simultaneously. In other words, the authors comment, the presence of the herpes virus and the suggestion of the development of the herpes are not sufficient to produce the herpes. There must be, in addition, an affect which inhibits the defense mechanism sufficiently so that the herpes virus can become effective." Under the influence of hypnosis many other lesions have been produced such as urticaria, subcutaneous and intracutaneous hemorrhages, eczema, and psoriasis.

By way of summary, the author of this chapter would like to emphasize the fact that the psyche and skin are richly endowed biologically to cooperate in an expression of the organism's disturbed equilibrium. Nevertheless, the literature is still confused by contributions which serve merely to indicate that skin disorders may have psychic etiology, and vice versa. One of the major factors contributing to this confusion is the vain attempt to label various dermatoses as psychic or somatic in origin. (Skin manifestations related to psychic mechanisms can only be so adjudged by psychic analysis and not by inspection.)

There has been an increasing attempt, nevertheless, to discover the mechanisms involved and some progress with regard to methods. The primary linkages, as in other fields of medicine, concern the physiological changes that accompany emotion. It is no coincidence that the more aware the dermatologist becomes of fundamental physiology, the more interested he becomes in the psychological background of his patient.

Sweating as a psychophysiological link is known to every layman as many a "G.I." who has "sweat it out" will testify. Kuno's[159] work on the physiology of human perspiration gives emphasis to the emotional factor. The difference between eccrine and apocrine glands and the location and relation of the latter to sexual phenomena have been described. The relationship of the sweat mechanism to disease processes is perhaps best illustrated by Harris'[153] case of a 24-year-old marine who had spent 150 days in naval hospitals for a recurrent fungus infection of the feet. It was finally discovered that excessive sweating due to an anxiety state was of primary importance in sustaining the infection. Actually many patients report a different odor occasioned by fright or anxiety.

Skin Conditioned by Homeostasis

1. **Acetylcholine.**—In 1936, Grant, Pearson, and Comeau[152] described a well-defined type of urticaria

which hitherto had not been generally recognized. Its main features were that the urticarial attacks were regularly induced by emotion, exercise, or warmth. As a result of their observations, these authors suggest that in these patients the urticaria is due to the release of acetylcholine in the skin as a result of stimulation of cholinergic nerve fibers and that the release of acetylcholine in turn leads to the liberation of H-substance from the skin cells.

Their technique involved soaking the legs in hot water until the body became warm. This regularly induced an attack of generalized urticaria. Arresting the circulation to the legs while they were warmed prevented the urticaria. If the circulation to one arm was arrested and the legs heated, a general urticaria developed except on the ischemic arm. Then when the warming was stopped, the patient cooled and the circulation was restored. While the rash was subsiding a very intense urticaria quickly developed on the previously ischemic arm. Controls showed that the arrest of the circulation alone, without warming the legs, did not provoke the urticaria. This showed that H-substance was released in the skin of the arm while its circulation was arrested and in response to warming the legs. Further evidence of this was obtained by first congesting the arm before arresting its circulation and repeating the experiment. Then when the urticaria began to develop on the free arm, but not until then, numerous bluish spots of local vasodilatation appeared in the skin of the congested and occluded arm. These marked the places where wheals developed when the circulation was restored.

> "It follows that the H-substance must be released in the skin through the peripheral nerves, for the nerves constitute the only functional connection between the ischemic skin where H-substance is released and the body where the stimulus is applied. Proof of this is supplied by observations on cases, 1, 2, 3, by which it was shown that blocking of a cutaneous nerve prevents in its area of distribution the development of the urticaria in response to warming the legs."

Grant, Pearson, and Comeau[152] were able to provoke attacks of urticaria in these patients by injection of choline derivatives. "It seems reasonable to believe that the urticaria following exercise and emotion in these cases, is due to a similar action through peripheral nerves induced centrally or reflexly." Grant and his co-workers point out that this action is not abnormal but rather that the abnormality lies in the skin cells. The skin of these patients responded abnormally to a release of acetylcholine at the nerve ending.

Hopkins, Kesten, and Hazel[155] were able to confirm the work of Grant and his associates. Their evidence indicated that whether the urticaria follows exposure to heat, exercise, nervous excitement, or injection of a drug, it is caused by direct action of acetylcholine or some related compound on the cells of the skin in these heat-sensitive people. They referred to this generalized type of urticaria as "cholinogenic" to distinguish it from other localized types with a different mechanism.

2. **Vasomotor Mechanisms.**—Mittelman and Wolff[162] observed the effect of emotion on skin temperature. The study was made on five patients during their regular analytic treatment. Observations took place in a constant temperature room with the use of the Hardy radiometer. Constant relationships were found between finger temperatures and a large variety of emotional reactions in seventy-six out of eighty-three interviews. Certain variables were taken into account. "In broadest terms vasoconstriction (fall in temperature) in the fingers is correlated with an increase in conflict while vasodilatation (warm hands) is correlated with uninhibited action and emotional security."

The most obvious psychosomatic mechanism is, of course, blushing. However, whether this concept is valid in pathologically congestive reactions still awaits further investigation. In Rothman's opinion[167] emotional vasomotor impulses to the skin are always of short duration and thus incapable of producing any permanent injury although they may very well interfere with the course of a disease which is present independently from emotions. Klaber and Wittkower[158] as a result of their study of fifty cases of rosacea concluded that while a constitutional tendency to loss of contractile power of the smaller blood vessels of the face seems to be necessary for the establishment of this disease, the type of personality and the effects of emotional disturbances upon it, may be of fundamental importance. These authors suggest that dynamically blushing or flushing accompanies feelings of inferiority, guilt, or shame, as is seen in an intensified form in erythrophobiacs. Rosacea is often precipitated and accompanied by blushing, flushing. and erythrophobia.

Psychic Component

1. **Idiopathic Pruritus.**—Pruritus, either localized or generalized, with no internal or external "lesion" to account for it, is usually termed idiopathic or functional, like essential hypertension. The mechanism of itching is still obscure, but many observers agree that psychological factors play a considerable role whether the cause is obvious or not. Variations in the sensory threshold at which stimuli become consciously manifest, and "fixation" on the part involved are probably major determinants. Kalz[156] has seen a series of cases in which a continued mechanism seemed to be present. His patients had feelings of guilt, frequently linked with the fear of having acquired a venereal disease.

> "This focuses their attention on the genital organs and pruritus occurs. The pleasure derived from scratching seems to play a minor role. The perpetuation of pruritus then is easily explained by anatomical changes. Scratching causes loss of the horny layer, parakeratosis, and thickening of the skin, both by multiplication of epithelial cells and elongation of rete pegs, thus leading to the histological picture of lichenification. This thickening of the skin causes pruritus per se, which in turn leads to more scratching, as well as to more intense focusing of attention on the regions affected, which may cause fear and apprehension. This is a perfect example of a vicious circle of psychosomatic reaction, and such cases may well present difficult therapeutic problems." *

Doubtless the skin is chosen with extreme frequency by the neurotic as the site for his somatic abreaction, first, because of its peculiar psychotopographic condition and second, because of the character of the pruritic mechanisms which are always ready and especially suited to abreaction. It is essential to bear in mind the very close connection between pruritus and sexual sensations. Anyone who observes an acute attack of itching and devotes attention to this aspect of the patient's behavior, cannot fail to see this parallel. The curves representing both mechanisms have a perplexing similarity, and it is not an accident that folklore designates sensual sensations as tickling or itching. Thus, in a number of pruriginous manifestations, genuine masturbatory equivalents are found. Sack[168] refers to the very instructive case of a woman in whom obstinate eczema, spread over the whole body, was the symptom of an unequivical sexual neurosis; the patient produced sexual orgasm by unrestrained scratching. Stokes[173] writes of a man who refused treatment for his ringworm with the remark that it resulted in more pleasant sensations than sexual relations with his wife. Thus, it is not surprising that the vulva, scrotum, and anus should so frequently be chosen as the site of dermatological reaction. In the symptom complex of pruritus ani and/or pruritus vulvae it is well to keep in mind that in those cases with a predominant organic etiology, psychological factors may play a role in the intensity and prolongation of the symptoms. The physician should be particularly on the lookout for such factors when the pruritus continues after the organic causes have been eliminated.

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* See Dunbar: *Emotons and Bodily Changes*, p. 389.

C. J. Drueck[149] writes that "while the diagnosis of functional pruritus must be based primarily on the study of the patient's personality and emotional make-up, it is helpful to remember that in contrast to irreversible pruritus which tends to be constant, functional pruritus takes the form of sudden attacks." He points out that many women with anal and vulval itching are suffering from unconscious conflicts, and that clinically the itching frequently follows an emotional disturbance.

In cases of pruritus vulvae, unrelieved sexual tension may be the predominant motivating force. Poor sexual hygiene, fear of pregnancy, or relative impotence on the part of the husband may all be found. In other patients the psychological disturbance may be more complex. R. D. Gillespie[151] cites a case which I quote:

"Mrs. E. H., aged 38 years, complained of pruritus vulvae et ani, starting 13 years previously. It started at night. When pursued to say why she could remember this, she confessed ultimately that she had withdrawn her hand from perineal

> scratching to find it covered with blood, a menstrual period having started. This made a lasting impression. There had been, at the age of 12, a number of episodes of a sexual kind which had all been colored with unpleasantness. The last one in particular had involved a friendship with a man of whom her parents disapproved and the friendship had ended with an attempt at assault on his part, after which she had broken with him. The pruritus had become worse at this time and was especially bad at her periods. Evidently a leucoplakia developed, and an operation was performed at another hospital for removal of the affected skin while at the same time the ovaries were irradiated. The pruritus continued after the artificially induced menopause, and she came for further advice. In addition to the discovery of the historical facts of her sexual life, it became apparent that she was very much under the direction of her parents, especially her mother. Her parents, even when she was 38, would object to her going out in the evenings. Emancipation from so much domination as the result of psychotherapy and ventilation of her anxiety about her sexual history was followed by diminution and the ultimate disappearance of the symptoms."

Milton Rosenbaum[166] describes two patients in some detail and in each case uncovers the specific conflict related to the symptom. In both patients pruritus vulvae represented an hysterical conversion symptom. This paper should be read in the original.

Just as pruritus vulvae is an expression of repressed genital eroticism, so anal pruritus may be the clue to unconscious anal homosexual desires. Saul[170] describes the case of a young man who developed occasional attacks of pruritus ani during analysis.

> ". . . as the analysis progressed, it became evident that the pruritus developed regularly upon occasions when he would be taken out, for example, to dinner by older men who were personally interested in him. The analytic material showed clearly that passive and homosexual wishes were aroused by these situations. . . . The regular occurrence of pruritus when his passive anal homosexuality was aroused as well as the analytical material, left no doubt as to the connection."

Saul makes it clear that in no way should it be concluded that passive anal homosexual wishes are regularly connected with pruritus ani.

C. H. Rogerson[165] described the case of a 50-year-old bachelor whose complaint of pruritus ani had lasted many years and had been treated by many local applications.

> "On careful investigation it was found that the patient derived much pleasure from applying the various ointments which he possessed. In this case also the nature of the pruritus gave a clue to its significance. It always occurred at night and he confessed that he invariably awoke rubbing the anus and then experienced pruritus. He described various dreams that he had had of a passive homosexual nature thinly disguised, but treatment could not be pursued further as he had no real desire to achieve a more normal sexual adjustment."

Schilder[172] observed a 35-year-old man who complained, among other symptoms, of a distressing pruritus ani. Masochistic, passive, and homosexual wishes toward father and mother played a dynamic part in his psychic structure.

2. **Urticaria.**—Urticaria is an acute or chronic condition of the skin characterized by the appearance of wheals which may be localized or generalized. Itching or tingling is almost always present. The mechanism of the production of the wheal as yet remains unknown. Etiologically, allergic, toxic, physical, and emotional factors have been shown to have a causal relationship. In many cases more than one factor is implicated. The example of cholinogenic urticaria has already been cited. This holds true in many of the dermatoses. Stokes,[174] who has constantly advocated the idea of multiple etiology in the dermatoses, put it very aptly:

> "One might almost say that until relatively recently only self-infliction, recognizable by the bizarre and unclassifiable physical outlines of the lesion, was admitted to the psychogenic in diseases of the skin. There is also recognizable in medicine in general, a disposition to think in terms of sole causes rather than complex interacting factors. This sole-cause attitude of mind has perhaps an admirable cutting edge in exposing the etiology of a relatively unknown group of ailments; but it must give place ultimately to a viewpoint which recognizes multiple causation and interrelations as equally fundamental if not more fundamental than the single isolated cause. The psyche rarely appears in dermatoses as a sole cause, and for that reason has met with more difficulty in acceptance, perhaps, than have fungi, body cells, and so forth . . ."

Obermayer,[164] in his article on the functional factors in common dermatoses, points out that in many dermatoses in which emotional disturbance plays a role, this factor does not stand alone; "it may not even play the most important role. It may form only one link in a chain composed of several causative elements of which allergic, bacterial, and toxic are, perhaps, best recognized."

In the allergic dermatoses "the threshold of allergic response may be raised or lowered at a given time by the state of emotional tension. A patient may react to an allergen at one time but not at another." Two examples are cited: One was that of a patient who reacted to a certain food at home but not on vacation even though the food was obtained from the same source. The other occurred in a child with asthma and dermatitis whose attacks were aggravated by ingestion of fish. In a sanitarium, ingestion of the same fish failed to produce a reaction in the child.

There are numerous case reports in the literature confirming the role of emotional factors in urticaria. Naber[163] cites the case of a 45-year-old woman who suffered from severe attacks of urticaria every evening for ten years. All general medical and dermatological measures were unsuccessful. Psychological investigation revealed the fact that she was annoyed that her brother came to her home every evening so that she was never able to be alone with her husband. After the connection here had become clear to her, she no longer had urticaria. She was still free from urticaria after two years.

Dunbar[5] describes a case of urticaria which demonstrates the often forgotten fact that relieving a patient of his skin symptoms does not always cure the disease. The patient was a girl who developed severe generalized urticaria shortly after taking aspirin. Complete physical examination and allergic work-up were negative. When the condition persisted for three weeks, a psychiatric consultation was requested. It was discovered that her somatic symptoms served the purpose of sustaining her extreme passive masochistic wishes. She cleared up after one interview, and although she was tested by renewed ingestion of aspirin, the lesions failed to reappear. Dermatologically, she was cured but it is obvious that she was the kind of person who would readily develop new symptoms, perhaps more serious ones, when under emotional stress.

Abramson[144] described the case of a 31-year-old married woman who suddenly developed frequent attacks of hives. On investigation, it was shown that the hives consisted of a whealing response to cold. "On the basis of the case history and laboratory data, it appears that in this case of a whealing response to a physical agent, emotional factors played an unanticipated role in the pathogenisis of a whealing response." Subsequently, as the patient developed some insight into her focal problem, she noticed that she did not wheal as usual. In Dr. Abramson's words: "This case, then, represents a spontaneous recovery from a whealing response to cold without the use of histamine or any other so-called desensitizing agent."

In evaluating the role of emotional factors in disease processes, psychoanalysis merits first place because it is able to uncover the specific relationship between psychic process and physiologic dysfunction. Thus, Saul,[171] in the case of a young girl suffering from persistent chronic urticaria, was able to demonstrate that every attack, without exception, occurred in an identical situation: "when intense longings were aroused but were in the very moment of frustration. The onset occurred when the patient felt on the verge of frustration in all of her human relations and in particular, by the marriage and departure of her father." Prominent features of her personality were tension, masochism, repressed exhibitionism, frustrated longings, and repression of sexual wishes. Dr. Bernstein, an allergist, examined the patient frequently throughout her analysis and at no time was he able to discover any specific allergens related to the attacks. It is of interest in this case, as in many others reported, that weeping bore a special reciprocal relationship to the urticaria. "It relieved the patient's disappointment and anger. When she wept, she did not have urticaria, and the attacks usually terminated with weeping. Conversely, when she suppressed her weeping, she developed urticaria. Her repetitive dream would terminate in either weeping or urticaria. She said that the urticarial swelling of her eyes felt as though she 'had cried a lot and could cry no more,' as though she literally 'could feel the tears back there.' "

This observation led to a clinical experiment with a girl seen at the hospital who had been crying more or less continuously for three and one-half months, ever since the birth of an illegitimate child. The patient was told that if she wept so much, she might be found committable. She stopped crying, and the next morning she had a generalized urticaria of the chest, back, and arms. After several days she was told that if she had a good cry she might feel better. She replied, "You seem to want me to cry, but I don't feel like it any more." The following morning the rash was gone.

3. **Eczema.**—Eczema is an acute or chronic inflammation of the skin which is characterized by the diversity of its manifestations. Erythema, papules, vesicles, pustules, oozing surfaces, crusts, and scales are usually present in varying combinations. It may be localized or generalized, and itching is almost universal. Eczema is a complex disease; which forms of dermatitis belong under this heading is still a moot point. Clinically, many types have been described.

Etiology: Eczema is one of the most common diseases of the skin. It may occur at any age in either sex. A multiplicity of causes, local and internal, have been shown to be of etiological significance, but specificity, especially in many of the chronic types, still awaits investigation. Emotional disturbance as a contributing factor has been commonly observed, but unfortunately not many detailed investigative procedures have been carried out.

Lynch[160] and his associates have carried out studies which shed further light on this problem. They state that thirteen patients with atopic eczema and four with late exudative diathesis were subjected to a complete psychosomatic study by a dermatologist, an allergist, and a psychiatrist. In the atopic eczemas, constitutional and hereditary factors were significant by reason of the personal and familial allergic background. Physical similarities included evidence of atopy in one or more forms; physical vigor, rapid pulse rates, and high pulse pressures. They were under normal weight and had a tendency to vascular hypotension and lowered basal metabolic rate. Intradermal skin tests were of positive significance in the majority of cases. Personality factors in common were these: suppressed resentment, tension, and more than average intelligence and self-assertiveness. Certain other similarities were present but of less importance. Anxiety and hypochondriasis were almost uniformly absent. In practically all cases the onset of the eruption or its exacerbations was influenced by environmental factors but the dynamics varied. "The results do not permit a generalized concept of a personality type. These results would support a concept of a relative and dynamic relationship in which constitution, specific allergic sensitizations, personality and environmental stresses play roles of varying degree in each individual's total reaction."

A somewhat similar study of atopic eczema now under way at the Presbyterian Hospital corroborates many of these workers' findings. We, too, find repressed resentment as an outstanding feature. The psychobiological findings in most of our patients also come within normal range. We also would agree on the importance of environmental factors, but whether or not a specific dynamic constellation is present, is still a matter for further investigation to decide. Analyzed cases would be of enormous help in shedding light on this problem, and it is to be hoped that more contributions to the literature will be forthcoming.

Miller[161] reported his observations of two patients with eczema who came to analysis because of severe neurotic disturbances. The first case was that of a young man with a hideous facial eruption as well as lesions on the forearm, hands, and scalp. He came to analysis because of life-long feelings of inferiority and shyness. His active-passive conflict in relation to his father would seem to be causally connected with his skin lesions. His aggressive, exhibitionistic drive aroused his guilt and fear and he retreated to a passive masochistic attitude. Since this produced shame and further competitive effort, the cycle was complete.

Thus his exhibitionism and masochism were constantly stimulated and the skin lesions supplied an outlet, for by scratching and macerating his skin he satisfied his masochism and at the same time exhibited the lesions.

The second patient, a young man in his twenties, sought analysis for sexual impotence, but he was also suffering from chronic dermatitis which dated back to infancy. The focal conflict was similar but expressed in a more realistic way. In both patients the skin manifestations served as a medium for the expiation of their guilt. "The hostility was turned inward and was expressed in a masochistic form upon the skin—in case 1 by actively injuring it, and in case 2 by a more symbolic expression. The exhibitionism, which as has been shown, expressed their competitiveness, ambition, and defiance, in an infantile manner, also served their need to impress, startle, and command attention (in a self-destructive way) by showing others their diseased skin."

4. **Psoriasis.**—

Definition: It is a chronic, inflammatory disease of the skin, characterized by dry patches covered with white scales. Remissions and recurrences are the rule. Itching is usually absent.

Etiology: Many theories have been propounded, but the cause is still unknown. In regard to emotional factors, it has been generally observed that exacerbations may follow acute psychic trauma. Wittkower,[177] who studied eighty-six soldiers suffering from this disease, concluded that in some patients, emotional crises of a nature specific to the individual affected acted as a catalyst to mobilize a dormant predisposition to psoriasis.

Bunnemann[147] reports an interesting case of psoriasis in a man for whom he had to write a court opinion, pointing out that psoriasis belongs among those skin disorders in which exacerbations have been observed paralleling psychic disturbances, in which, however, we have as yet been unable to demonstrate the relationship of psychic and somatic processes. In this case Bunnemann demonstrates the psychogenesis of the psoriasis (see the original). The patient had undergone many chrysarobin treatments. As a result, the skin healed, but after psychic excitement the skin eruption recurred. In this case, also, Bunneman was able to reproduce the disease hypnotically, and to eliminate it afterward by hypnotic suggestion.

5. **Lichen Planus.**—

Definition: An inflammatory disease of the skin and mucous membranes characterized by small, flat, shiny papules with a violaceous tint. Itching is usually intense. The disease may be acute or chronic, but the latter is more common. Its course is indefinite with periodic exacerbations.

Etiology: Most textbooks list emotional strain as a factor, but the relationship is unknown.

Kartamischew[157] reported on eight cases treated by hypnosis. In four of the eight patients, the lesions disappeared; three improved; one remained unaltered. Ramel[169] reported the case of a woman physician who developed lichen planus a few days after severe psychic trauma. When the usual therapy failed, the disorder disappeared after the introduction of psychoanalytic treatment.

6. **Exudative Discoid and Lichenoid Dermatitis.**—In 1937, Sulzberger and Garbe[175] described a distinctive type of dermatitis of unknown etiology and obscure pathogenesis. Up to the present time the patients have been almost uniformly refractory to treatment. The only thing that seems to be of more than temporary help is a change of environment. The most characteristic lesion is an oval, discoid plaque which shows rapid variations in consistency and appearance. They are at times oozing or scaling and can rapidly pass through many of the stages characteristic of eczematous lesions. This phase is usually brief and may be overshadowed by the dry and lichenoid phase. The more persistent lesions are sometimes definitely infiltrated and are clinically suggestive of premycotic eczema or other leukotic dyscrasia. In some cases urticarial showers are present. The favorite location for the discoid and

oval lesion is the penis. Other sites of predilection are extensor surfaces, perimammillary areas, anterior and posterior aspects of the axillary folds, scrotum, circumoral region, bridge of the nose, abdomen, and scapular areas. Pruritus is intense and intractable. All nine cases described in this report were confined to Jewish men during the fourth or fifth decade of life. One of the features is that several cases showed labile temperaments and either cyclothymic or decidedly neurotic personalities.

A 35-year-old, married, Jewish man was admitted to Presbyterian Hospital with a diagnosis of discoid and lichenoid dermatitis. This was his second admission. He was first admitted two years previously shortly after he had contracted the disease.

Family History: When the patient was 14, his father died of asthma at the age of 57. His mother is 74 and in good health. His oldest brother was killed at the age of 27, when the store which employed him was held up. He was found riddled with bullets, still clutching the money he had defended. This episode remained as one of the vivid memories of the patient's childhood. One sister has hay fever. Other siblings are in good health.

Personal Data: He was born in New York City, the youngest of five siblings. He was breast fed for eleven months and for the first five years of his life was a chubby youngster with long curls and was referred to as the brat of the family by everyone except his mother. He described his family as being very close-knit and affectionate. "My father was a wonderful man, all for the family. He was a good provider and did everything for us. I never remember getting licked. I'm the baby of the family and my mother still treats me like one. It's embarrassing when she comes to the hospital; she hugs and kisses me and just won't let me go. She does this at home, too. I used to resent it but I don't anymore." He met his wife when he was 25 and two years later they were married. After his marriage he visited his mother every day and ate there quite often. He claimed that his wife wasn't a good cook, After he had been sick for a year he expected her to leave him. "I can't understand how anyone will do the things that she does for me. I know, now, that she would step into a fire for me if I asked her." When he was first married he was offered a job in a nearby town, but his wife would not leave the city. "She was very attached to her mother and I resented it. She married me for better or worse. Now she'd go anywhere with me."

Previous Health: This was his first major illness.

General Adjustment; Family: Some of this has already been discussed. He remembers his father as a gentle, religious, easy-going man whom he loved more than anybody else. As he talked about his father he began to cry: "I always wanted his respect. I just couldn't stand hurting him but I guess I did." He recalled two instances at the age of 13 when his father caught him misbehaving. On one occasion he was smoking and the other, he stayed away from Hebrew School and kept the money he was to have paid the teacher. Both times his father developed an asthmatic attack and the patient felt that it was his fault. "After my father died, I became bad. I played hookey, gambled, went out with prostitutes and then quit school when I was sixteen. If he had lived, things might have been different." One day his brother and sister visited him at the hospital and offered to loan him some money. I saw him within an hour of this incident and he was in an angry mood. "I would cut off my right arm for them but I don't like to take. They can afford it and don't need it but I'm not so sure how they feel about giving it to me. They come and tell me what to do but they don't know how I feel. My sister has given me plenty. I already owe her my life." A month later he borrowed $4,000 from this same sister to buy back his business. Then he left orders that his mother wasn't to visit him at the hospital. He claimed that she upset him too much. When he left the hospital, he went to live with his sister and still wouldn't let his mother come to see him. His skin had improved a great deal and he frankly admitted that he was superstitious about seeing his mother. If he did he might get a relapse. Previously, he had called his mother from Florida every day from the moment his previous relapse had occurred and had gone to her home when he returned to the city.

Education and Occupation: He quit high school at 16 in order to go to work. "I like to make more than the next guy. I want to be better than he is and get ahead." Although his family was fairly well off economically, and his father gave him enough spending money, he started to work at 10 as an errand boy after school. Then, after quitting school, he worked in a factory as a shipping clerk. When he thought there was no chance of getting ahead, he quit and got a job driving a truck. He was earning fifty dollars a week at eighteen. With the depression, he lost his job and became a taxi-driver until 1938 when he became a partner in his own taxi business. Within a year he owned the business outright.

Social Adjustment: He always had many friends and as he expressed it "was one of the gang." His intellectual interests were practically nil, but he was intensely interested in sports and went to boxing matches and ball games every chance he got.

Sexual Adjustment: This appeared to be normal.

Reaction to Illness: When he first became ill, he thought he was going to die. He didn't want anybody in the family to come near him. If they did, he would cuss them out, including his wife and mother. His mother cried a great deal and kept saying, "Why couldn't this happen to me." This convinced him that he was going to die. He wanted to go to a hospital in order to get away from his family.

Addictions and Interests: He was an inveterate gambler. He had started when he was twelve. Dice, cards, and horseracing were his favorites. While he was courting his wife, this was a constant source of contention between them and when he married, he promised to quit. But he didn't. "I wanted to make one big killing so that I could be independent for life." However, his wife soon found it out and this time he stopped gambling for three years. Then he went on a gambling spree and completely neglected his business. He lost all his money and had to borrow some to pay his gambling debts. Shortly after this he became ill and his first reaction was that his gambling had something to do with it. He was overwhelmed with the need to confess to his wife, which he promptly did.

While the patient was under treatment for his present exacerbation, an incident occurred which brought the whole situation to a focus. He had improved enough to be sent home and he was being followed in the clinic. His skin was almost completely clear of lesions, itching had stopped, and he stated that never. since the start of his illness had he felt so well. He had his business back and everything was going along splendidly. Then suddenly he saw an opportunity to make a lot of money, but it involved risking the loss of his business. He decided to take the gamble and won. That night he had the following dream: "About 15 guys came at me and clawed and bit my skin. They were horrible looking men. I remember seeing Boris Karloff, Lon Chaney, and Bela Lugosi. I tried to fight them off but they kept after me. I woke in a panic and was sweating." His skin was itching again and he couldn't stop scratching. By the end of the day his skin was weeping. That night he had a similar dream and fell out of bed. When he came to the clinic, it was obvious that a relapse had occurred.

7. **Dyshidrosis (Pompholyx).**—Dyshidrosis is a disease of the hands and feet characterized by vesiculation, excessive sweating, and pruritus. According to Andrews,[145] "Pompholyx occurs chiefly in high-strung, nervous individuals and is essentially a psychosomatic dermatosis."

Wittkower[177] examined fifty patients and found that a majority of them had been emotionally maladjusted before the onset of their skin disorder. He classified the patients in five groups: (1) vain and conceited; (2) ambitious, afraid of failure; (3) afraid of getting hurt; (4) afraid of showing fear; (5) afraid of own impulses. "The evidence accumulated, strongly suggests that pompholyx, viewed in terms of psychodynamics, serves a definite purpose. In a manner so familiar in hysterical conditions it is used as a means of evasion (in groups 1 to 4) and as a means of self-punishment (in group 5). In the peculiar and yet so eloquent body language, pompholyx seems to convey that an individual wishes to 'throw in' his hands or is unwilling to use his feet (groups 1 to 4). Whereas, in the case of group 5, it seems to signify an urge to confess and a desire to atone."

8. **Verrucae.**—The cure of warts by suggestion is a dramatic example of the effect of psychotherapy on an infectious process. Although laymen have been treating warts by suggestion for centuries (with rather bizarre and magical methods), it wasn't until 1927 that the first extensive and systematic investigations of this subject were made by Bruno Bloch.[146] He reported cures in 44 per cent of verruca vulgaris and 88 per cent in verruca plana juvenilis. The element of time was considered in the evaluation of cured cases. It is known that success with this procedure depends for the most part on the personality of the therapist, including the presence or absence of conviction of the effectiveness of the method. Bloch even investigated this point. He found that four different physicians in his clinic had respectively 44 per cent, 35 per cent, 31 per cent, and 25 per cent success.

Vollmer[170] recently reported his observations in more than 100 cases treated by a suggestion and his results were similar to Bloch's. He makes this significant statement: "The physician has to take his time, has to be in a proper state of mind, has to concentrate and to be convinced of what he is doing."

9. **Dermatitis Artefacta.**—This lesion is produced entirely as a result of a psychic disturbance. While the lesion is mechanically produced as the result of conscious deliberate action on the part of the patient, often as a means of gaining sympathy or as a way out of an unpleasant situation, analysis usually reveals a more complex and deep-seated personality disorder. Of all the organs of the body, the skin is particularly well adapted to fulfill the unconscious demands of exhi-

bitionism and masochism by reason of its topographic and morphological inheritance. "Pleasure aroused by painful stimuli of the skin is the erogenous basis of all types of masochism."[150]

10. Neurotic Excoriations.—Neurotic excoriations are a result of psychic tension. Some people unconsciously pick at their skin just as others bite their nails. When the tendency becomes so persistent that multiple excoriations are produced, the above diagnosis is made. This disorder is predominantly a psychic one and treatment should be so directed.

Treatment: Treatment will depend on the evaluation of the psychosomatic diagnosis. In some disorders, such as acute urticaria, elimination of the offending agent plus pharmacological help may be all that is necessary. In most of the dermatoses, however, and especially in the chronic ones, the best results will be obtained by a combination of physiological and psychological therapy. From what evidence we have, it is significant, especially to the dermatologist, that brief psychotherapy can be of much value in many syndromes. Another important point is that suggestion, deliberate or implied, seems to have more influence on the skin than on any other organ system.

CHAPTER VI

EYE, EAR, NOSE, THROAT, AND DENTITION

Although a synopsis of psychosomatic diagnosis and treatment with Osler as a frame of reference would deal with eye, ear, nose and throat, and dentition only incidentally, every practicing physician is asked to give advice about disorders of these organs.

Unfortunately, there are still few careful studies of the role played by emotional and personality factors in such disorders, but it is generally recognized that in treating them a psychosomatic approach is advisable and sometimes essential.

Ocular Disturbances

It is interesting that in spite of the paucity of studies by specialists in this field Freud,[182] Ferenczi,[181] and Groddeck[187] made some of their first observations on the eye and then went on to study other types of organ dysfunction about which much more is known today.

Of the very few recent studies relative to the eye, Harrington's[188] deserves attention. He states, in brief, that while most ophthalmologists are familiar with the ocular manifestations of psychosomatic disorders, few are aware of the significance of what they see. He then discusses the following specific syndromes:

1. Ocular manifestations of vasomotor disturbance
    a. Amaurosis fugax
    b. Migraine
    c. Neurocirculatory asthenia
    d. Central angiospastic retinopathy
    e. Raynaud's disease
2. **Glaucoma**
3. **Ocular manifestation of hysteria**

Amaurosis Fugax.—It is Harrington's opinion that this condition is primarily vasomotor in origin with aretinal or cerebral anoxia precipitating the visual disturbance. He saw numerous cases among military personnel. "Evidences of emotional stress, anxiety, anger and vasomotor diathesis were outstanding." Relief from anxiety resulted in cure.

Migraine.—Visual disturbances associated with migraine are primarily cerebral in origin, but authors have reported visible retinal vascular changes during attacks of migraine. Harrington has observed two cases over long periods of time in which could be demonstrated visible constriction in the retinal arterioles during the period preceding the attack and continuing on into the period of preheadache hemianopsia. In each case there was evidence of emotional instability and in one case he was able to precipitate attacks by induction of an anxiety state.

Neurocirculatory Asthenia.—Harrington observed a fairly large number of patients with neurocirculatory asthenia in an overseas naval hospital. A high percentage had visual disturbances without organic disease or refractory error. Many gave a history of amaurosis fugax. Two patients had angiospastic retinopathy, and there were three cases of hysterical amblyopia.

Central Angiospastic Retinopathy. — This author studied nearly one hundred cases. The only constant factor in all cases was autonomic instability. "Psychic trauma in susceptible individuals can produce as profound organic changes in connection with the autonomic nervous system as extremes of temperature, anoxemia or direct physical trauma."

Raynaud's Disease.—It is Harrington's opinion that varying degrees of retinal vasospasm may occur in cases which are essentially a pre-Raynaud syndrome and that psychic factors may play a primary role in precipitating the attacks of visual loss associated with true Raynaud's disease.

Glaucoma.—In the light of present knowledge of the anatomic and physiologic connections of the autonomic nervous system with the higher cerebral centers through the hypothalamus, it is entirely logical to assume that this governing mechanism in the maintenance of a constant level of intraocular pressure, vulnerable as it is to psychic disturbance, may thus directly affect the delicate balance of intraocular pressure.

Schoenberg[205] reports eleven cases of primary glaucoma in which he found a definite relationship between anxiety states and recurrent attacks of ocular hypertension. His observations were made in routine ophthalmological examinations in which the patients were encouraged to speak freely about their problems. A fairly persistent finding was that attacks of ocular hypertension were almost immediately preceded by anxiety-producing situations or emotional disturbances of some sort. He finds that emotional disturbances not only maintain and increase ocular hypertension but affect the precipitation of the glaucomatous condition.

Ocular Manifestations of Hysteria.—Most commonly encountered ocular manifestations of hysteria are amaurosis, amblyopia, photophobia, ophthalmoplegia externa, and blepharospasm. Before diagnosing any one of these conditions as hysterical in origin, one must establish the positive diagnosis of hysteria.

Wittkower and his associates[215] made an interesting study of "night blindness." The importance of vitamin A deficiency in the etiology of night blindness is considered so important that night blindness tests have often been used as quantitative indicators of vitamin A deficiency. The findings of this study are therefore especially revealing.

Biographical studies were made of fifty-two soldiers with night blindness. The ages were from nineteen to fifty. They received careful ophthalmological examinations and were tested for dark-adaptation.

The patients suffered from severe night blindness, and felt unable to find their way about in the dark without help from others. In conjunction with their night blindness they often suffered from photophobia, blurring of sight, black spots in front of the eyes, and other disorders. Previous periods of complete blindness were reported by four. Headaches, dizziness, and fainting spells were reported in varying numbers. Most of them had a diet with sufficient vitamins, and in only nine cases of dyspepsia was the possibility of a vitamin A deficiency present.

The ophthalmological examination was negative for night blindness in forty-one of the forty-two cases examined. The dark-adaptation tests revealed a normal range of deficiency as compared to a control group.

Psychiatric examination indicated that the majority of the patients had severe emotional disturbances. The psychiatric disorders were as follows: predominantly acute and chronic anxiety states (twenty-seven cases), eight cases of conversion hysteria, and four cases of depression, as well as three cases of psychopathic personality type.

In twenty-seven of the fifty-two patients the outstanding personality pattern was a strong overdependence. In twelve cases an aggressive, overcompensating pattern was predominant. Upon closer examination these were found to have strong dependence-independence conflicts. Other personality characteristics observed were nervous habits such as nail-biting, speech disorders, a fussiness over food, and excessive fear of darkness and injury, especially to the eyes. Significantly, conflicts over aggressive and prying tendencies were present. These characteristics long antedated the onset of the disorder.

The psychodynamics, Wittkower and his associates find, revealed traumatic disturbances in the early stages of emotional development. The personality patterns and characteristics suggest to the authors an unresolved mother-child relationship which, apparently, originated at the nursing level and was unresolved throughout adult life.

A fairly comprehensive review of earlier studies in this field will be found in Dunbar.[3] To this little has been added in the last ten years beyond a few case history reports and incidental reference to ocular symptoms occurring in conjunction with other illnesses. The Dartmouth study on a case of isochorea[197] checked by the Rorschach test contains some important observations. The author personally, in conjunction with ophthalmologists, has treated successfully patients with glaucoma. There appears to be a definite personality type peculiarly susceptible to this illness, the knowledge of which may be valuable in treatment. But at present, our knowledge allows only the statement that any patient with this illness deserves a careful personality study and sometimes psychiatric treatment of the underlying emotional conflicts.

Auditory Disturbances

There is very little concrete work concerning the psychosomatic aspects of auditory disorders in the past* and recent literature. Nearly all of the statements made about psychosomatic studies of ocular disorders apply equally to recent studies of auditory disorders.

It happens not infrequently that patients suffering from trauma or other illness lose their hearing temporarily. Rubinstein[202] cited a case of a 14-year-old girl with complete deafness in both ears. Under hypnosis it was discovered that the deafness was psychogenic in origin: The girl had been caught in the act of kissing a boy by a nurse living in the same house, who reprimanded her severely for some days after the incident. The girl became very much afraid that her parents might find out. A week after the incident, she became deaf. Patients with no hearing defects often become deaf now and then during a period of psychotherapy. Emotional factors are important in the relief even of other syndromes such as otosclerosis where organic damage is known to occur.†

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* Dunbar: *Emotions and Bodily Changes*, ed. 3, New York, 1946, Columbia University Press.

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† See Chapter XI.

Disorders of Dentition

To a physician interested in the psychosomatic or psychobiological approach to illness, Ryan's[203] book, *Psychobiologic Foundations in Dentistry,* one of the first in the field, is arresting. On the jacket the following questions appear in capitals: "What handicaps dentists? Can the dentist overcome these handicaps?" This book is in essence a polite request from our colleagues in dentistry for better cooperation with their colleagues in other medical specialties. Ryan writes:

> "To establish satisfactory dentist-patient relationships, the dentist needs to know what may happen to the *body* of Man when his *mind* is disturbed, and what may happen to the *mind and behavior* of Man when his body is diseased.
>
> "Knowledge of the expanding field of psychosomatic medicine will greatly aid the dentist who is determined to preserve the institution of *personal service. An understanding of this new scientific subject places the dental profession in a position to diagnose the dental problems of patients more effectively.*
>
> "Applying the principles of psycho-biology correctly will bring a rich harvest to the clinician."

The table of contents reads as follows:

I. The Nature of Man and His Dental Disorders
II. Constitutional Anatomy and Physiology
III. Varieties of Structure and Function
IV. The Principles of Psychosomatic Medicine
V. Clinical Aspects of Psychobiology
VI. Dental Disease in the Seven Ages of Man

Ryan concludes his book with the following statement:

> "There is never, from the moment of birth to the moment of death, a separation of the psyche and the soma. Together they are life. What one experiences, the other expresses. Wounds of the spirit are expressed in malfunctioning of the body. Injury or disease of the body produces changes in feeling, tone and emotional responses. The one word *psychosomatic* defines organismal unity and totality. We who treat disease should never forget that what we do with our minds and hands, with our own psychosomatic component, has an influence on the minds and bodies of the persons whom we treat. No treatment can be either psychic or somatic. Every treatment is both."

Ryan supplies an excellent bibliography which relates his field to newer trends in other specialties.

On January 21, 1946, the following statement appeared in the New York Times:

> "A dental 'backlog' of aching teeth with 500,000,000 cavities makes national dental health insurance impossible.
>
> ". . . Dr. Harold Hillenbrand of Chicago, general secretary of the American Dental Association, said an estimated 112,000,000 new cavities occur each year among Americans above the age of six. He added:
>
> "'Indications are that all the dentists in the United States are only enough to care for one-half of this maintenance work of 112,000,000 new cavities, without filling the old ones.'"

In spite of such statements as these, Pelzman[199] writes that the psychosomatic concept is being recognized in dentistry more than in other branches of medicine. This is not surprising, because diseases of the oral cavity were formerly thought to have little connection with the rest of the body and even less with psychic factors. Technical procedures which consume the major portion of the dentist's time tend to focus his attention on the oral cavity as a separate entity.

Pelzmann, a member of the author's training group at Presbyterian Hospital, whose special project was in the Department of Dentistry, has contributed the following paragraphs to this volume.

Although as yet little is known about the psychodynamics of oral manifestations, there are sufficient clinical and experimental investigations to prove that they exist. The influence of psychic factors on salivation is well known and relevant observations date as far back as 1908.[192, 193] More recently, Strongin and Hinzie[209, 210] and others have made studies on patients with various psychosomatic disorders.

Not only the amount, but also the pH of the saliva is influenced by emotional factors.[208] So is its composition, and it is well possible that these factors in turn play an important part in the development of dental caries.

Much study has been dedicated to the connections between the cortex and the vegetative nervous system and the part emotions are playing here. The function of the endocrine system, which is very much influenced by emotions, has an important role in the development and final structure of the teeth and periodontal tissues.[204, 211]

Certain dermatological conditions at times manifest themselves only in the oral cavity; for example, lichen planus or angioneurotic edema. In these a psychosomatic relationship can often be established. On the basis of available evidence it is fair to say that in the oral cavity the psychosomatic chain of events—emotional conflict, concomitant alteration in physiology, reversible pathological changes, irreversible pathological changes—takes place as frequently as in other parts of the body.

Because of the specific anatomical structure of the tissues in the oral region, pathological changes become fixed much more easily than in other parts of the body. If caries has attacked a tooth, even to the slightest degree, it remains carious and can only get worse, never return to its original state of integrity. The treatment, a filling or inlay, is symptomatic, restoring the function, but not eliminating the original cause of the disease.

The periodontal diseases give another example of the early irreversibility of the pathological changes.

While there is ample proof for the existence of psychosomatic relations in dentistry (Burstone in his survey of literature lists ninety references[179]) very little is understood in regard to the psychic mechanisms involved.

Weiss[213] discusses the problem in a more general way. "Somatopsychic aspects of the problem should be borne in mind. For example, a continuous toothache, a bad odor from the mouth, or irregular position of teeth may have considerable influence on the personality of a patient. Of course, deeper investigation might reveal a psychosomatic connection that brought about such a condition in the beginning."

A good general survey of psychosomatic relations and discussion of their possible connections with problems in dentistry was made by Campbell.[180]

> **"It will be amazing how frequent is the association of prolonged financial worry or marital incompatibility with dental caries or paradentosis."** [180]

Recently Ziskin and Moulton[218] investigated oro-lingual pain in fourteen patients, all middle-aged women. They were studied clinically and also psychiatrically. The authors did not attempt to gain deeper insight into the psychogenic nature of the symptoms or into the underlying character structure. Even so, they felt that idiopathic glossodynia "seems to be primarily a psychogenic syndrome occurring chiefly in menopausal women who suffer from emotional conflict, sexual maladjustment, and frequently cancerophobia."

Graven[186] reports cases of idiopathic toothache that were cured by psychoanalysis.

Glossodynia and bruxism often appear to be linked with tension states. In one case a patient had swelling, burning, and pain in the tongue whenever she was emotionally upset. She admitted that when "nervous" she pressed her tongue against her teeth, until it became painful. Simultaneously it seemed to swell and become too big to find place between the teeth. When in the course of superficial psychotherapy she became aware of this relation between her condition and her emotional state, she improved gradually as she became able to give up this habit.

There are so many factors that may play a part in the development of psychosomatic symptoms in the oral region, and their manifestations are of such a variety that there may be no clearly defined personality profile. Nevertheless, these patients do have certain tension points in common. For example, there is a tendency to repress feelings of aggression and hostility. Many we have seen stated that they had decided "not to speak up," but rather "to keep their mouth shut." In our experience Siskin and Moulton's findings were confirmed in many patients, the majority of them being female. Pelzmann concludes that observation of the patient, in the dental chair, as a unit of psyche and soma, provides a basis for prophylaxis and etiological therapy.

Miller,[*] who has devoted special attention to the psychosomatic aspects of dentistry, states that psychosomatic dentistry might be defined as the relationship of the mental well-being to the health and integrity of the oral tissue.

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[*] From a round-table discussion: "Psychosomatic Factors in the Etiology of Periodontal Disease," at a meeting of the American Academy of Periodontology, 1947.

He has kindly allowed the use of the following excerpts from a round-table discussion, in combination with the author's own observations. He gives the following outline of the balance between the more somatically and the more psychically conditioned forces, together with illustrative material.

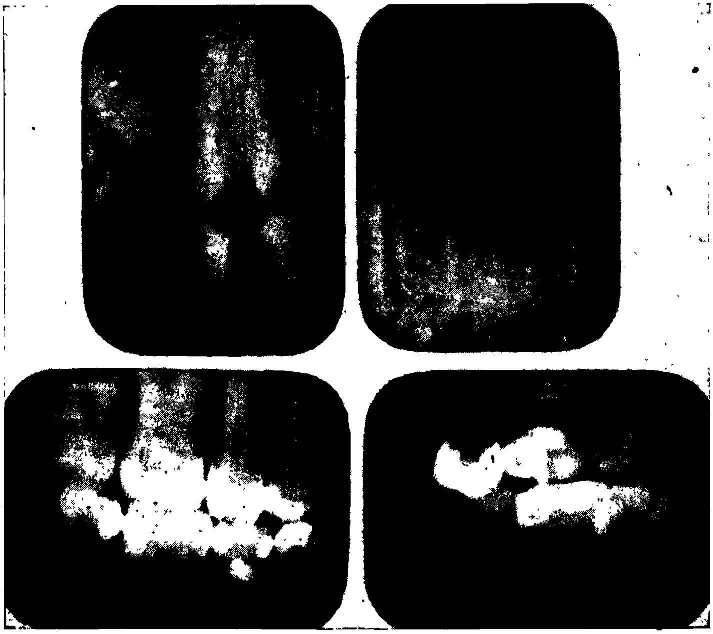
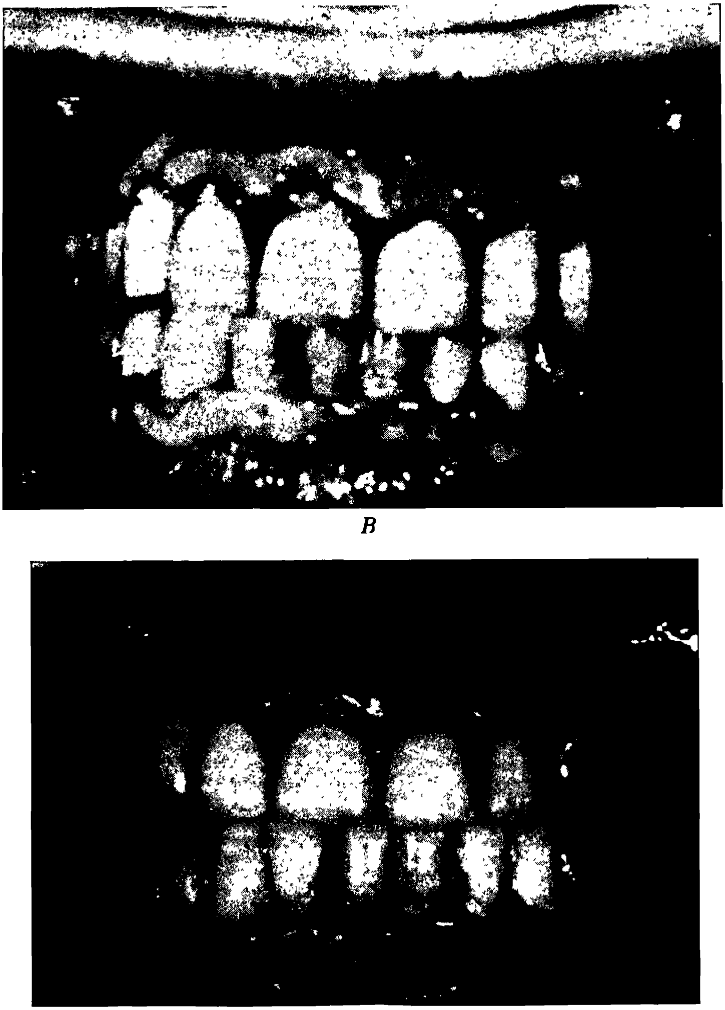


Fig. 1—*A*. Posterior roentgenograms showing alveolar destruction more advanced in anterior region where greater strains are placed.

A. Emotional tension may create oral disease through a disturbance of the physiology, e.g., bruxism due to an unrealized aggression; change in salivary composition caused by an emotional disturbance.


B

C

Fig. 1.—Mrs. L. S., female, aged 26. Effect of bruxism and nail-biting. Diabetic (fasting blood sugar 216 mg. per cent). Bruxism and nail-biting since age 14, but more accentuated during past six months with increased family problems.

B. Centric occlusion. Note poor gingival tone and locked occlusion which accentuates harmful effect of bruxism.

C. Protrusive position.

Rittenberg states:[201]

"Bruxism is a disease which manifests itself in the mouth by its destructive effect on the dental apparatus. It is therefore an organic disease at that level. At the physiological level it presents activity of the mouth musculature and is a function disease. Beyond these two levels it becomes the province of psychosomatic medicine to answer the 'why' for the existence of the condition."

Briggs says:[178]

"Mental stimuli, such as restlessness and the conflicts of modern society, decrease the calcium content of the saliva, while calmness may increase it."

B. In the opposite direction, oral deformity due to loss of teeth, cleft palate, harelip, will cause a mental disturbance due to the fear of ageing, lack of esthetics, or interference with speech or function.

Landa relates:[194]

"I have seen victims of this deformity (cleft palate) among girls between the ages of 16 and 25 and I believe that words are inadequate to describe their suffering. Two of them were in such a state of despair that they became suicide risks. One, though under treatment by a psychiatrist, made an attempt at suicide. The other one had an obturator constructed by a dentist that greatly improved her phonetics. This aided her in becoming more or less adjusted to her condition so that she now fills a responsible secretarial position. But her struggle toward adjustment was a more difficult one. An unsuccessful harelip operation in childhood only worsened her facial disfigurement. With six perfectly normal and handsome brothers and sisters she resented her deformity as a very exceptional cruelty. The glamorous social success of her brothers and sisters contributed in no small measure to her misery. Before her obturator was constructed, she told, suicide seemed to her the only way out of her miserable existence. But an artificial restoration saved her life. The collapsed section of the lip in the region of the harelip was brought forward by the labial flange of the obturator. The anterior teeth were set in proper alignment with the facial contour and the line of occlusion in harmony with the irregular outline of the lip. The obturator closing the cleft of the palatal vault made it possible for the patient to speak and be understood better. The contribution of this appliance to the patient's physical health and well-being has dispelled the patient's distress and anxiety in this case as no psychiatric treatment could have done."

"Another significant case from a psychosomatic standpoint is that of a handsome man, 30 years of age. He presented himself at the clinic with a letter written in his behalf by a friend. It stated that for a period of fifteen years he had been wearing an obturator which gave him real satisfaction. He had lost his dental apparatus two months before and was immediately discharged from his job as he could not make himself understood. He was unable to enjoy a meal because part of the food would escape through the nose. He could not find a new job because of his phonetic difficulties. He had been a jolly fellow up to the time he lost his appliance. Since then he had turned depressed and melancholy, and his friends feared that he might lose his mind. We learned a couple of months later that the man had been taken to a city hospital because of his mental condition."

"The dentist's opportunity in the psychosomatic field is perhaps greater than it is in other medical specialties. This is due to the fact that any artificial denture restoration (fillings, jacket crowns, fixed bridges, partial dentures, full dentures and obturators) always serve three purposes at the same time, namely: mechanical efficiency, phonetics, and esthetics all of which have a profound effect upon the emotional life of our patients."

C. The majority of cases present a reciprocal relation with greater or lesser percentages of psychic and somatic phases in innumerable variations. Practically every case falls into this category.

In the returning veteran, and even in those who lived through the tension of the war years at home, we have seen hundreds of cases in which psychosomatic factors have produced advanced periodontal disease with extreme alveoloclasia, marked mobility of the teeth, and destructive lesions of the gingival tissues. In many cases multiple and universal extractions were necessary, where previously only a mild situation had been present.

Grinker and Spiegel have advanced this important concept[86]:

"The war has hastened the development of psychosomatic medicine because the severe stresses which it has imposed on the fighting men have brought into the clinical symptomology of war neuroses thousands of emotionally induced physical disturbances. Hundreds of doctors have witnessed this phenomenon at first hand and have learned of the relationship between psychological causes and physical effects. They are eager to learn further details of etiology and methods of treatment, for they know therein lies the future of medicine."

The same future may be expected of psychosomatic dentistry.

Psychosomatic factors may interfere with periodontal health in the following ways:

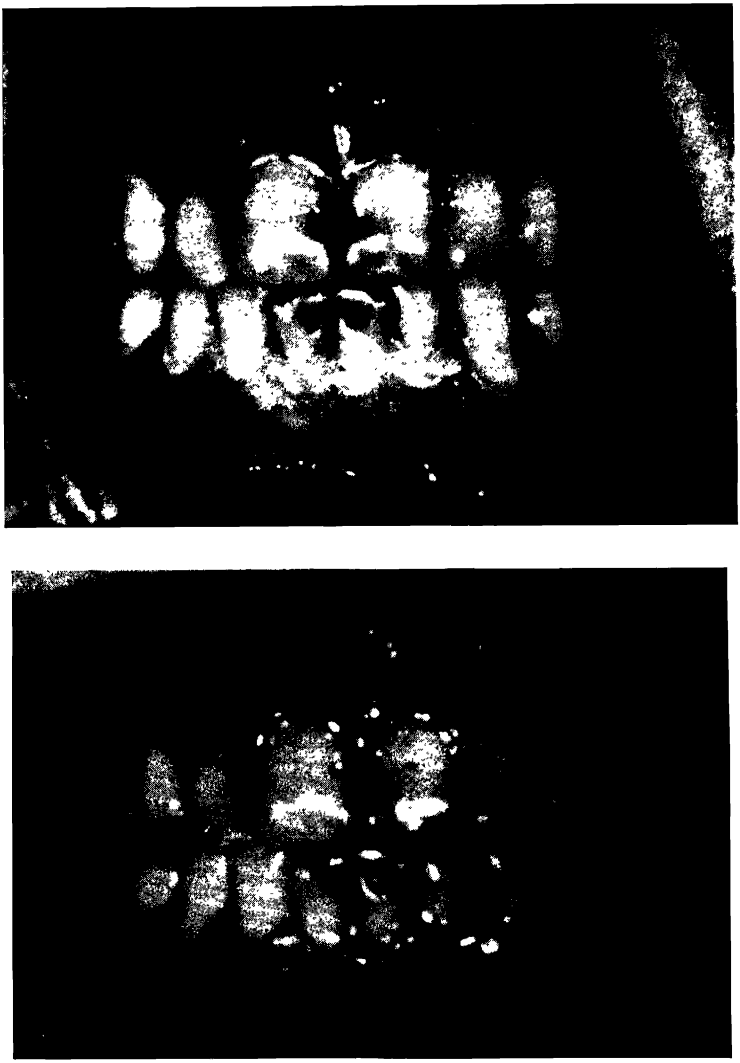


Fig. 2.—Mrs. A. R., female, aged 37. Necrotic gingivitis associated with emotional tension.

A. Note gingivae are intact interproximally.

B. Necrotic gingivitis after her only child had been ill two weeks and maid had left. Slept poorly and extremely nervous. Note gingival inflammation and interproximate destruction.

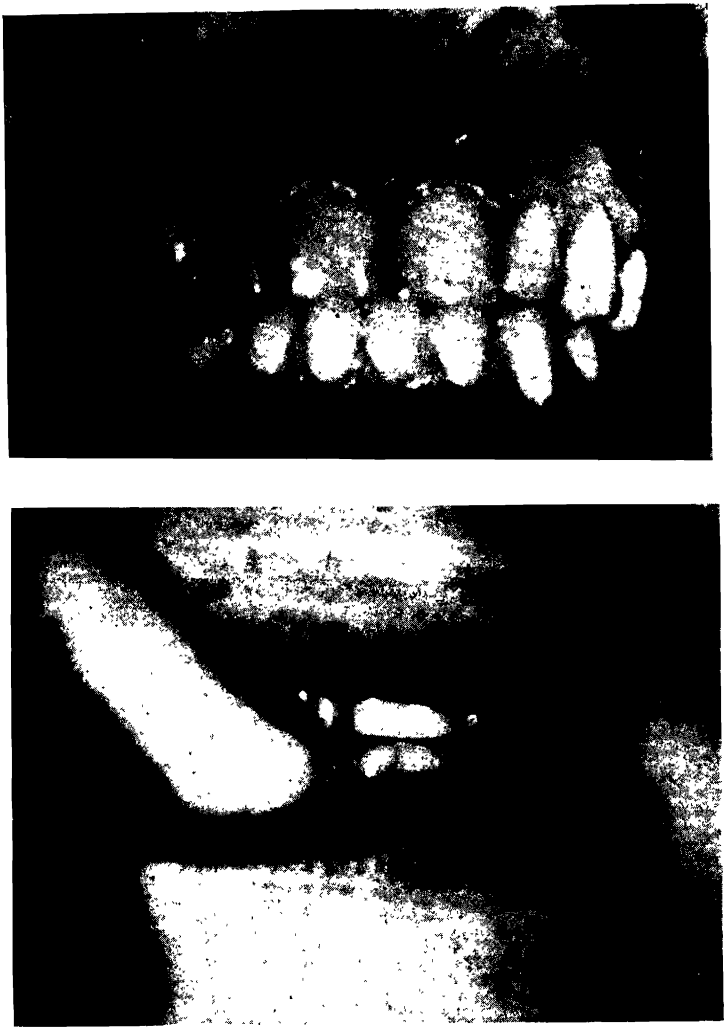
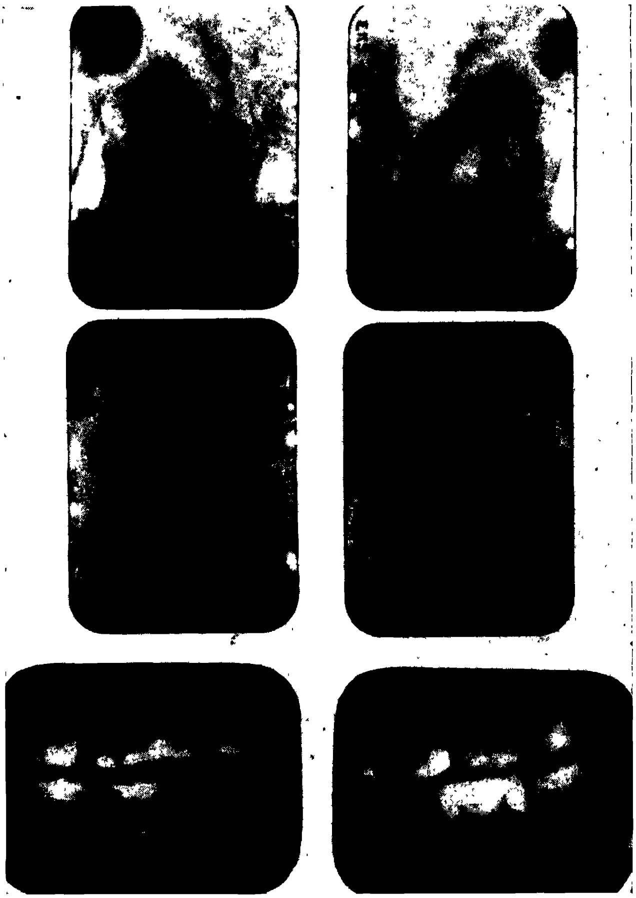


Fig. 3.—Miss K. P., female, aged 31. Effect of nail-biting and cuticle-biting in left central incisor region. Had been under psychiatrist's care for two years and dismissed as impossible to treat. Slightly retarded mental development.

A. Fistula over left central incisor.

B. Position of nail in biting.



C. Roentgenograms revealing alveolar destruction around upper left central incisor. Alveolar bone around other teeth is fairly good.

1. Reduction of local nutrition through vasospasm: This is probably the manner in which Speransky's[207] results were observed. Speransky has shown that by irritating specific areas in the brain typical periodontal lesions can be produced. He contends that:

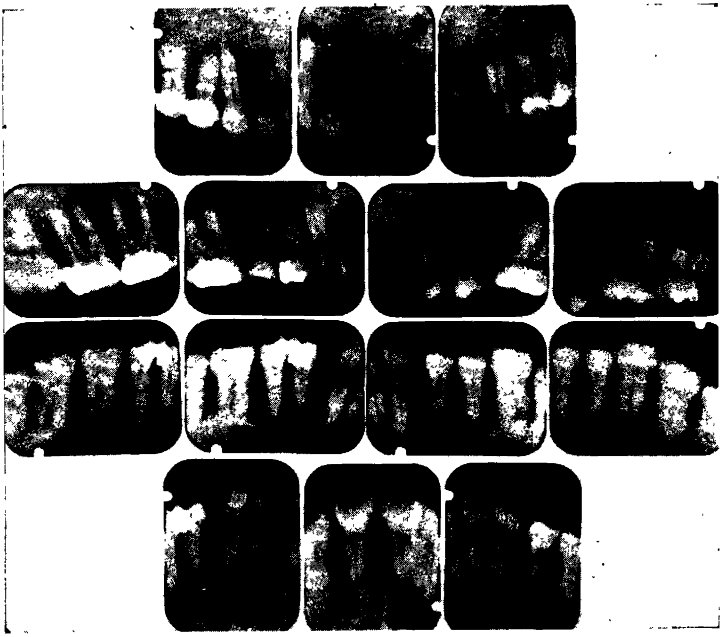
"Nervous influences on the cause of biophysical and biochemical processes in the tissues (neurotrophic influences), such as motion, receptor or secretory activities are manifested by changes in the state of various parts of the organism and are inevitably connected with change in matter."

If the infraorbital nerve or the mental nerve in rabbits is irritated by two to three drops of croton oil and the nerve severed, Speransky found that eight of fourteen of these rabbits developed hyperemia of the gingivae in a few days after the trauma to the nerve. The hyperemia was of a stagnant type and most prominent at the necks of the incisors. Pockets then formed and purulent exudate became apparent. Comparing this picture with that observed in his human clinic, Speransky concludes that there is a close resemblance between the two processes. The bacterial flora of the pus from these pockets proved to be the ordinary oral flora, and is the same as that present in human pockets.

Fig. 4.—Miss V. S., female, aged 22, Negro, nurse. Alveolar destruction associated with bruxism. Under extreme nervous tension since childhood. Also has vagotonia and recurrent mucous colitis.

A. Centric occlusion showing apparently good gingival tone.

In another experiment, an operation was performed on a dog's cerebrum and a special glass sphere inserted. Hemorrhage from the gingivae was noticed in two hours. Swelling and loosening and a dark border of acute hemorrhage about the molars of both jaws resembling human scurvy then appeared. The pockets deepened till the alveolar edge of the bone was exposed.



B. Roentgenograms revealing extensive alveoclasia in spite of apparently good gingival tone.

This was not painful to the dog and it ate and drank normally. The destruction was limited to the crests of the alveolar process and went on for days or weeks, gradually subsiding and breaking out afresh.

2. Development of objective habits which are antagonistic to the health of the periodontal tissues: e.g., pencil biting, fingernail biting.

Miller writes[196]:

> "One should suspect the existence in the patient of a personal tooth habit when there is deviation from normal in the contour and degree of wear of the teeth in question, or when separation of these teeth occurs . . . when these are noted the operator should investigate thoroughly the habits that are most likely to induce the abnormality."

Sorrin has listed some thirty-nine habits which may be founded on emotional tension or occupational pursuit.

It is Rittenberg's[201] view that:

> "Nail biting has long been considered an evidence of a deep-seated disease of the personality. The somatic manifestations are found in the fingers and in the mouth. Within the personality there can be found another group of instincts striving for expression. Historically this group of instincts develops from the infantile pleasure in finger sucking. With the development of the personality such a route of pleasure becomes forbidden and nail biting becomes the disguised escape of this group of erotic instincts. In every case of nail biting it is possible to demonstrate a powerful thrust of instinctual drives having to do with infantile pleasures via the oral mucous membrane. And at the same time the repressing forces can be shown to be adequate."

3. By inducing excessive chewing, clenching, or grinding: creating excessive wear and excessive pressures.

Rittenberg believes[201]:

> "Within the personality . . . there exists an aggressive group of instincts. They strive to find expression in the outside world. They would destroy, they would engulf, they would annihilate the outside world if they could get there. We can occasionally see this happening in pure form, in the manic rages of the insane. But under ordinary circumstances, the world of personal and social reality sets up barriers to the unchecked gratification of these instincts, in the form of conscience, morality, education and training. When the dynamic relationship of aggressive drives and repressing forces begins to show strain, the muscles of the mouth may begin to show irrational phenomena. They may contract unconsciously in response to the 'leaking out' of aggressive instincts, and bruxism results.
>
> "In every case of grinding of the teeth, there is a defect in the measures which the personality employs to inhibit aggression. In every case of bruxism the core of the problem is to be found in the functioning of the personality. The somatic

> destruction is the avenue of expression for the psychopathology which determines the why of the disease."

Frohman[183] relates how one of his psychiatric patients responded favorably to surgical periodontal treatment only to have a return to the old condition. The dentist then discovered that clamping of the jaws was the main etiological factor. Frohman relieved the condition by psychotherapy, producing a recovery surprising to the analyst, patient, and dentist.

It is Tischler's opinion[212] that:

> "Even mild cases of occlusal trauma or minor anatomic defects as the rough ends of cusps, will receive undue attention by neurotics, resulting in bruxism."

4. By creating taste perversions causing the ingestion of foods which are locally and systematically harmful to periodontal health: e.g., extremely spicy foods, acid fruits, excess of carbohydrates, which create direct effects on the teeth and structures.

Miller[196] has noticed the tendency of those individuals under emotional tension to ingest excessive amounts of candy, cake, coffee, and alcoholic beverages, as well as to smoke to excess, all of which produce trauma to the dental and periodontal structures directly.

Woodyatt[217] cites clinical evidence that "the emotions can regulate carbohydrate metabolism."

Neilson[198] states:

> "The frequency of a low sugar tolerance and glycosuria in mental disorders, the occurrence of so-called emotional glycosuria, the frequency with which emotional upsets and severe mental strain apparently initiate diabetes, and the frequency with which emotional and psychic upsets aggravate an already established diabetes, are well known and emphasize the nervous factors in the disease."

Selling and Ferraro[206] believe:

> "In the lives of mothers who are working out their own emotional conflicts on their children by overfeeding them, there is also a tendency to give attractive articles of food so that the child will not reject them and through the rejection of food reject the mother. Very often, since children's preferences run to sweets, the foods which are given are not those which balance the diet but rather those which appeal to the palate."

5. By permitting insufficient food intake through limitation of gastrointestinal function. Anorexia nervosa, intestinal spasms, ulcers, gall bladder symptoms will not allow enough food to be ingested to maintain body health. Many references in medical literature, e.g., Weiss and English, Dunbar, and Stecker and Ebaugh support this view.

Weiss and English[214] state:

> "Physicians with greater interest in psychological medicine find a much greater percentage of patients with symptoms referable to the gastrointestinal tract in whom emotional factors are chiefly responsible for the illness. Stevenson, in a study of 150 patients presenting themselves to a gastrointestinal clinic, found that in two-thirds of the cases there was an important emotional problem and Robinson, in a thoughtful analysis of fifty patients with digestive complaints, found that in two-thirds of them no organic lesion or unhygienic habits could be discovered to account for the symptoms. Moreover, the latter author felt that many patients have digestive symptoms as a manifestation of personality disorder before they develop organic disease of the digestive tract and that the latter might be prevented if they were successfully treated. This seemed to be especially true with respect to peptic ulcer. He went on to say that functional nervousness, including fatigue and anxiety, was by far the greatest detectable cause of recurrences of peptic ulcer symptoms, and in many instances it seemed likely that the same etiological factors were initially responsible for the ulcer. He thought, therefore, that the question could legitimately be raised as to how many of these patients might have escaped peptic ulcer if their functional nervousness had been recognized and treated in the first place.

We are persuaded from our own studies that emotional factors are the chief cause of gastrointestinal complaints and many other authors besides those cited could be quoted in support of this viewpoint.

Selling and Ferraro[206] point out that:

> "There are a number of psychogenic causes for the rejection of food. Cases of gastrospasm and the esophagospasm have been cited where an individual could not eat because of some psychogenic cause. On x-ray, the spasm can be seen."

These latter authors cite a case in the practice of William B. Fostner, Jr., of an individual who was worried about economic conditions and when the esophagoscope was passed to see why he could not swallow, it was clamped so firmly that it could scarcely be moved. When the patient was given reassurance about his economic situation, the spasm relaxed. It could again be produced by withdrawing the security that the earlier promise of an improvement in his job had produced.

6. By producing neglect of oral sanitation:

Preston[200] says:

> "It has been my experience that those patients who are depressed require more frequent attention than those who are exhilarated, active, because of the fact that they accumulate tartar more quickly than do other classes of patients. Just why this is so, I am unable to say, unless it is that their depression and the increased difficulty with which they meet their physical activities cause them to give less attention to their mouths than they would otherwise. It is also possible that there may be a chemical change in the secretions that ordinarily bathe the mouth."

7. By evolving subjective habits which are harmful to the periodontal structures: e.g., lip biting, cheek biting, tongue thrusting, tapping teeth together.

Gottlieb[185] contends:

> "The teeth should properly be held apart 23 hours out of 24, being contacted only during actual chewing functions. Persons with emotional stress may clench, tap or grit the teeth frequently or almost continually."

Hart[190] says that he has observed biting habits in a very high percentage of inmates of mental institutions. All practicing dentists have noticed the many habits developed not only by patients under emotional tension but during occupational pursuits.

Frohman[183] reports a case as follows:

> "A man, aged 43, had an unconscious habit of pounding his anterior teeth with the result that they had to be extracted. An anterior fixed bridge replacement for the pounded anteriors was likewise pounded out. Surgical periodontal treatment was of no avail. Psychiatric treatment was then instituted, and the unconscious factors in the habit made conscious. The habit then came under the patient's control. Looseness of teeth and bleeding stopped, and a successful fixed bridge was possible."

8. By causing bodily conditions inimical to the health of the periodontal tissues.

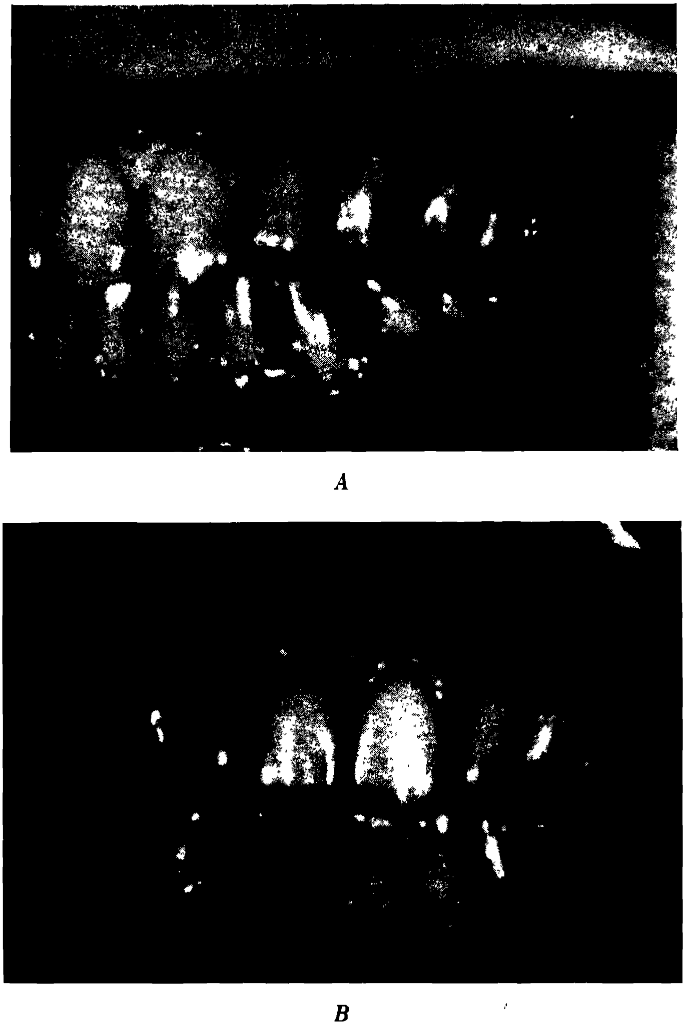


Fig. 5.—Miss E. G., female, aged 23, typist. Necrotic gingivitis associated with clenching and finger-nail biting.*

A. As presenting.

B. One week later tissues have healed after elimination of clenching and biting habits.

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[*] By courtesy of Dr. S. C. Miller.

Glaser[184] made determinations of blood calcium in normal, psychoneurotic, and psychotic persons. The normal he found varied on different days from 0.2 to 0.5 mg. per hundred cubic centimeters. In psychoneurotic and psychotic patients the differences were much greater, varying from 1.2 to 5 milligrams. Glaser attributes these changes to variations in sympathetic balance brought on by psychic stimuli. Thus blood calcium levels are shown to be altered during mental states.

Henry and Ebeling[191] found:

> "A relative decrease of blood calcium and phosphorus in tense, agitated, depressed states."

Wolf[216] says:

> "An overactive thyroid gland may cause great nervous tension which in turn may cause bruxism."

Halliday[189] and Means[195] write:

> "It can definitely be stated psychic factors are very important in the etiology of thyroid disorders, especially hyperthyroidism, and from this it is reasonable to assume that mild endocrinopathy induced by emotion is of importance in the etiology of periodontosis."

No doubt, further investigation will uncover other means by which psychic trauma may produce acute and chronic periodontal diseases. It is my belief that in the complexity of etiological factors of neurotic gingivitis, emotional tension plays a major role.

The science of periodontia should be developed to the highest degree so that it can prevent the loss of teeth which is responsible for emotional castration (Stekel), and ageing neuroses. The field of psychosomatic dentistry is a fertile one for study and the dentist is here presented with another weapon in his rendition of a complete health service.

In order to know what etiological factors can be of psychogenic origin, it is best to examine the etiological chart appearing in Miller's *Oral Diagnosis and Treatment.** Those factors which by a conservative estimate have been found to be of emotional origin are italicized.

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* Miller, S. C.: *Oral Diagnosis and Treatment*, ed. 2, Philadelphia, 1946, The Blakiston Company, p. 297.

ETIOLOGY OF PERIODONTAL DISEASE

S. C. MILLER

Dysfunctional

1. Overfunction
   - a. Excessive stress on teeth
   - b. Insufficient periodontal support
   - c. *Too powerful masticatory musculature*

2. Underfunction
   - a. *Premature wear* (natural or artificially produced)
   - b. Nonocclusion
   - c. Indolent mastication

3. Abnormal habits
   - a. *Unilateral mastication*
   - b. *Abnormal biting habits*
   - c. *Clenching*
   - d. *Bruxism and bruxomania*

Irrational

1. Abnormal anatomy
   - a. Tooth form
   - b. Tooth position
1. *Deposits on teeah*
3. *Nondetergent diet*
4. Food impaction
   - a. Vertical
   - b. Horizontal
5. Mechanical irritants
   Cavity margins, improper inlay or filling margins; bridges, orthodontic appliances, clasps or dentures which impinge upon or irritate the gingivae
6. Chemical irritants
7. Atmospheric irritants (mouthbreathing)
8. Improper toothbrushing
9. Improper orthodontic procedure

Systemic

1. *Faulty nutrition*
   - a. Acid-base disbalance
   - b. Vitamin deficiency
   - c. Mineral deficiency
2. *Debilitating disease*
3. **Blood dyscrasias**
4. *Endocrine dysfunction*
5. **Pregnancy**
6. *Allergies and drug idiosyncrasies*
7. **Metallic poisonings**
8. *Psychosomatic factors*

CONCLUSION

It is of some interest that papers on psychosomatic aspects of dentistry were presented in 1948 at the annual meetings of two societies particularly interested in psychosomatic therapy: American Society for Research in Psychosomatic Problems and American Psychiatric Association. In the same year, there was reference to the problem in a discussion during the annual meeting of the American Psychoanalytic Association. Nevertheless, dental and oral surgeons and practitioners of dentistry are making notes relative to their own observations, but only a few have made their notes available to the medical profession in general in more than fragmentary form. For example, the consensus among practitioners of dentistry appears to be that there are about as many over-sensitive and troublesome patients among men as among women, but that the problem of management varies considerably, depending on the sex. The point was brought out in a discussion of an unpublished paper by Adrian H. Vander Veer that boys and some men lose their anxiety and their exaggerated pain reaction when treated by a woman dentist. The psychodynamic meaning of attention to the mouth is rarely discussed in dental literature.

Treatment of the disorders here discussed should follow the same principles outlined for treatment of other illness syndromes where more specific information is lacking.

Attention should be called, nevertheless, to the rapidly increasing interest in the psychosomatic aspects of eye, ear, nose and throat, and dental practice. In spite of this increased interest, however, it may be said that this chapter, if compared with other chapters in this volume, will be outstanding as lacking substance and material. The author once considered making it a brief appendix to the preceding chapter, but decided instead to let it stand as a challenge to physicians who deal daily with such problems and need to know more about them.

CHAPTER VII

METABOLIC AND ENDOCRINE DISTURBANCES

ROBERT C. LOWE, M.D.*

Disturbances in metabolism cannot be understood without an evaluation of the role played by the endocrines. It is impossible to write a chapter on the endocrines without discussing metabolism, and it is equally impossible to discuss metabolic disorders without reference to the glands of internal secretion. It has been said that the endocrines translate the tempo of the nervous system into the tempo of metabolism, and vice versa. Our present knowledge about endocrines, on the one hand, and metabolism, on the other, is unsatisfactory. Perhaps, all that can be said with certainty is that they are closely linked, and that disturbances on either side are occasioned by minor or major dysfunction of other organ systems in which physiological and psychological factors are better understood. Claud Bernard suggested that adjustment of organism to environment would be solved only when more was known about electro-chemical changes in the fluid medium of each cell and the permeability of the cellular membrane. Until more is known, the practicing physician may well concentrate his attention on major syndromes (metabolic plus endocrine) about which we have some clues. Psychosomatic approach involves the concept of a constellation in dealing with disorders of any organ system, but in these disorders the constellation is particularly complex, slow, and insidious in producing illness. Often by the time it is recognized, the illness, for example diabetes or cancer, is incurable.

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* Associate Professor of Medicine, University of Oklahoma, Oklahoma City, Okla.

Diabetes Mellitus

In the present fragmentary and conflicting state of knowledge of the prediabetic and diabetic individual, diabetes mellitus must be described in an incomplete manner. It has been stated to be "an inheritable, constitutional disease of unknown cause, characterized by a continuing hyperglycemia and glycosuria and, in the more advanced stages by acidosis. . . . Of the many factors involved in the equilibrium of these reactions in normal conditions, the particular ones of the greatest interest in this disease are the hormones of the islets of Langerhans, the anterior pituitary, and adrenal cortex, the two latter increased and the former diminished in the relative sense. It appears, however, that a deficiency of insulin (relative or absolute) is to be considered as the basic determining factor."[228] The definition reflects the concentration of attention on the metabolic disturbance, which has been more fully studied and developed as such than has our understanding of the whole problem that the patient presents. At least four factors are recognized as of primary importance in the development and course of the disturbance: (1) heredity, (2) endocrinology, (3) obesity, and (4) psychic factors, each requiring a different method for its study and elucidation. This latter fact has tended to keep them separate and unrelated to each other in the concept of the disturbance as it occurs in the individual. Their relationship to each other, their relative importance in the individual case, and their mode of action and interaction are only partially known.

Diabetes mellitus is one of the metabolic disturbances in the development of which the role of heredity has been clearly though incompletely defined. The work of Pincus and White[243] suggests that the genetic pattern for diabetes is transmitted as a mendelian recessive. If both parents are diabetic, all their offspring will eventually become diabetic. If one parent is diabetic and the other nondiabetic from a diabetic family (a carrier), 40 per cent of the offspring will eventually develop diabetes. None of the children will become diabetic if one of the mates is neither diabetic nor a carrier. It is not known how the genetic factor works in producing an individual who will become diabetic. There is evidence that the functions of the endocrine system are in part controlled by the gene pattern transmitted, but this system is an integral part of the organism and cannot be separated from the rest except artificially. The influence of heredity on the etiology of obesity has been denied,[240] and the psychiatrist interested in the dynamic structure minimizes heredity as a determining factor in personality development.

Further emphasizing the hereditary aspect of diabetes, the problem of severity, time of onset, progression, and regression have been studied by Colwell,[222] by a statistical consideration of changes in insulin requirements and age at which the diabetes became clinically apparent. Utilizing the mathematical technique of extrapolation backward from the observed slope of the yearly rate of change of the daily insulin dosage, and accepting the assumption that this rate of change represented the rate of progression or regression of the disease, he arrived at the conclusions, in part, "that diabetes of a predetermined type is inherited, begins its course at birth, and progresses through an unrecognized phase at a rate which continues, with minor variations, after its discovery." These conclusions are in accord with those of White, and White and Pincus, arrived at by other means. Other factors influencing the occurrence and course of diabetes in the individual patient are of necessity neglected in such a study but should not be lost sight of.

The relationship of heredity to endocrine function has been mentioned. The problem of the endocrine disturbances involving particularly the pituitary, pancreas, and adrenal cortices that alter the body's metabolic processes has been discussed by Long.[235] Present knowledge suggests that the endocrine change is not always the same from one patient to another, possibly not even in the same patient during the course of the condition.

Some evidence has been presented by Draper, Dupertuis, and Caughey[229] from a morphological basis. Using the anthropologic methods of Martin and Sheldon, they demonstrated a correspondence of preponderant muscular development with insulin sensitivity and severe diabetes at one extreme, and obesity, insulin resistance, and mild diabetes at the other. On the basis of suggestions from the work of Houssay,[233A] and more recently by Himsworth,[233] these two groups were compared with insulin sensitivity in "pancreatic" diabetes and the insulin insensitivity in "pituitary" diabetes as produced in animals, the latter by means of injections of anterior pituitary extract. The validity of the obvious inferences that "severe," "juvenile," "insulin sensitive" diabetes is "pancreatic" diabetes, and the "adult," "mild," "insulin resistant" diabetes is of pituitary origin is still to be tested in other ways.

The reports of Priscilla White[248] on juvenile diabetics and diabetic dwarfism and the morphologic evidence of overgrowth preceding the appearance of the diabetes has been interpreted as evidence of an overfunction of the anterior pituitary in the pathogenesis of juvenile diabetes. The same suggestion is made by Feinblatt, Alpert, and Ferguson[230] with reference to insulin sensitivity in juvenile diabetics.

There are at least two possible explanations for these opposite conclusions: (1) animal experimentation cannot be applied in this instance to the problems of human diabetes, or (2) the evidence is not sufficient to do so with accuracy. On the basis of work by Richardson and Young, Long[235] has made a pertinent suggestion. In writing on insulin deficiency he states, "Insulin deficiency may be of two types, (a) that in which there is an actual decrease in insulin output of the pancreas due to a reduction in the quantity of islet tissue ["pancreatic" diabetes], and (b) that in which the insulin production may be normal or above normal but owing to alterations in the metabolism of the tissues is inadequate to supply the needs of the organism ["pituitary" diabetes]. Such a situation is encountered in animals injected with anterior pituitary extract and others of an unknown origin may occur. It should be remembered, however, that (b) is likely to pass into (a) since sooner or later the islets fail and undergo characteristic changes." In other words, what was originally a "pitutiary" diabetes may develop into a "pancreatic" diabetes in the same animal. Whether this can and does occur in the pathogenesis of human diabetes is the question.

The physiologic disturbance that occurs as a result of endocrine changes has been discussed by Long[235] and by Soskin.[245] The former presents the classical views of diminished glucose utilization in the absence of adequate insulin effect. The latter presents a reinterpretation, justified on the basis of inaccuracy in the older data, and interpretations in addition to his own studies to indicate an overproduction of glucose from altered fat metabolism.

In addition to the morphologic and endocrine evidence suggesting that diabetes mellitus is not a single clear-cut entity, Newburgh and his associates[239] have described a morphological, metabolic, and therapeutically distinct type. This group of patients is characterized as being middle-aged, obese, and exhibiting glycosuria and hyperglycemia. The altered ability to handle carbohydrate is not due to a disturbance in oxidation of glucose but is closely related to the factor of obesity. Reduction in weight improves the handling of carbohydrate to normal. What relation heredity, endocrine function, and psychic factors have in this condition is not known. In regard to the obesity itself, Newburgh[240] reviewed the theories and the evidence from his own work, and came to the conclusion that overeating relative to the energy expenditure was the cause of obesity. He was impressed by the frequency of etiologically related emotional factors.[241] Joslin[234] has made an extensive study of obesity in its relationship to diabetes. The weight of the evidence is statistical in nature, and the positive correlations obtained are interpreted as indicating a cause and effect relation. The evidence that obesity is not hereditary in the scientific sense of the term (perhaps the term "pseudo-heredity"[5] would apply), the opinion of Newburgh which has been noted, plus the evidence of its relationship to emotional factors to be developed later, suggest that some other relation than cause and effect may be considered. Perhaps there is some difficulty in the emotional sphere that is a frequent occurrence in the prediabetic individuals which leads to the relative overeating and consequent obesity.

Heredity and endocrine function are recognized by everyone as primary factors in the etiology and course of diabetes mellitus, with the possible exception of the distinct type described in which obesity is the dominant related condition. The role and action of the psychic structure and function need further emphasis and definition. Menninger[236] remarks that, "One is impressed with the inconsistency of the opinions that there is no denial of the great importance of the psychogenic factors once diabetes is established, and yet so conservative an opinion as to these same influences initiating the metabolic disorder."

The evidence presented by Dunbar,[3, 5] Menninger,[236, 237] Daniels,[223, 224] and by Weiss and English[214] from their own studies and the reports of others, leaves no doubt that emotions in some way influence the course of the metabolic disturbance characteristic of diabetes mellitus. How this comes about is not clear. The role of the autonomic system and its relationship to the cortical and organ functions and the effects of anxiety are discussed by Grinker.[232] In case the ego functions of the cortex are not adequate to handle the problem the anxiety presents, "the cortex or ego 'gives up,' allowing regressive, infantile modes of exteriorization of emotional expression, for the sake of avoiding more prolonged or greater emotional feelings. They result in visceral expression or organ dysfunction, which we term organ neuroses, that constitutes the first step toward organ disease." [232] This is what Dunbar[5] has discussed in other terms, writing of the somatic short circuit. "If then the personality is unable to cope with the problem, if any marked degree of unpleasantness or conflict is involved, the whole process is likely to be excluded from consciousness and thus create a sort of short circuit into subcortical mechanisms." A possible relationship of this mechanism through the hypothalamus and pituitary to the endocrine system is suggested by such work as that of Selye[244] on the "alarm reaction." The application to diabetes mellitus has been considered by Albright,[219] with special reference to the effects of infection and trauma in aggravating the metabolic process. The effects of psychic trauma with emotional effects may be included. A simpler course is that suggested by Cannon's work on the autonomic system, including the adrenal medulla, especially for short term effects.

The occurrence of anxiety, tension, and depression generated by conflicts that the patient is frequently unaware of has been specifically emphasized by Menninger, Daniels, and Dunbar. The fact that the patient may be unaware of them as such may lead to their being missed by cursory investigation. Menninger studied twenty cases of diabetes with associated mental disorder, ninety-three cases of uncomplicated diabetes, and four hundred cases of uncomplicated mental disorder. Depression and anxiety were the most common emotional states associated with diabetes. There was no preponderant type of mental disorder in the diabetics except that psychoneuroses of various types were frequent. Twelve of the twenty-two patients included in the first report had paranoid delusions as an outstanding symptom. Menninger states that one must refer to multiple etiologic factors in attempting to explain the cause of diabetes mellitus, but concludes that the diabetes develops as a part of the expression of the individual's total personality conflict.

Daniels suggests[223] that anxiety might play an etiologic role in the disorder. He comments on the frequency of depression (ten of twenty-three patients), and the role that these patients' personality difficulties play in the complications. He observes a close relationship between the depression of the sexual libido and accentuation of the diabetic symptoms. The effect of hypoglycemia in releasing repressed material which colored the symptomatology of the reaction is also noted. The necessity for handling this material may arise as a therapeutic problem. The patients may handle it in the formation of certain psychic reactions, such as phobias or amnesia.

Two of our patients who were studied as routine illustrated these mechanisms:

1. L. Mc., a married, white female, aged 50 years had had diabetes since 1925. She married in 1931, a year after her

mother died. A few years later they moved to Lakewood, New Jersey. "I was nervous when he worked in the dairy [which was near their house], he'd come in now and then. A dog upset me there." In 1935 her insulin was changed to protamine zinc type and she had her first shock while at home alone. Ever since this time "dogs barking make me upset. It gets so bad it is just like someone beating me. I'd go down in the cellar and close all the doors to get away from the sound of the dogs barking. I'd try to go away from there, but you can't stay out all night."

2. J. G., a 24-year-old white male, unmarried, in whom the diabetes began after he was struck by an automobile, "not a serious accident, just hit me in the stomach. I became hysterical—that is, people said I wandered around in a daze." "The summer of 1937 was a bad mess. Early that summer I had acidosis due to bad diet control. I was put on protamine insulin, the kind you have to mix, and in September had a bad protamine shock. The doctors thought it might have accumulated in me. I don't know how, as I mixed it and shook it as directed. I lost my memory completely for a week. It gradually came back, but I still can't remember anything about the month before the shock."

The problem of a more specific etiologic role of the personality structure and dynamics was approached by Dunbar[5, 227] on the basis of difference from other groups of patients, as well as consistency within a given group. Writing of the diabetic group she stated, "In these patients clear-cut emotional traumata preceding the illness occurred less frequently than in the cardiac and fracture patients, and a long period of stress and strain was a more frequent occurrence." The picture was more complex in the diabetic group, but the evidence indicated that the patients' difficulties began early in life, and included anxiety and indecision in the assumption of responsibility and sexual development, with a tendency to vacillate between dependency and independence. They were generally more passive than active, more masochistic than sadistic. Their ego was weak and the characterological defenses correspondingly weak, and anxiety was frequent and prolonged. Their social and sexual anxiety limited them in the discharge of emotional tension. Inability to follow a consistent course of action was characteristic of them. Dunbar applied the term "muddler" to describe their mode of action. Their reaction to their illness was frequently one of depression, and they had a strong paranoid trend with projection.

Our own case material parallels this description rather closely. It is not diverse enough to add to the solution of possible differences within the group. Although it is consistent, its significance must ultimately depend upon the proof of difference from similar groups within different diseases. The frequency of anxiety and depression that can be traced back over a long period of time agrees with previous findings. However, in view of the generally weak ego and inadequate defenses one would expect this to be true in any case. The fact that these patients, as well as those of Daniels[223] and Dunbar,[5] were selected on the basis of hospitalization may limit the value of any conclusions drawn. Further studies in unselected juvenile and adult diabetics are necessary. Nevertheless, a comparison of our case material with that recorded by Dunbar emphasizes the possibility that the particular constellation of components in the personality and environment in relation to heredity and endocrine function is of significance in the development of the illness. Extremes are evident here as elsewhere, cases in which the emotional factor is not evident in terms of overt anxiety or depression, and at the other extreme, cases such as those of Barahal and Freeman[220] and Newburgh and Camp.[242] The latter case was treated analytically with recovery, which led the authors to change the diagnosis from diabetes mellitus to emotional glycosuria.

Incomplete analytic treatment of a case of "neurosis with diabetes" by Daniels[225] failed to relieve the metabolic disturbance which, however, was clearly affected by environmental change. The author stated his belief that the diabetes was an integral part of the neurosis. Dunbar[5] reported the analytic treatment of a schizophrenic in whom the basic conflict was not resolved by the therapy. The patient went on to develop diabetes after a period of increased tension in the spheres she found to be significant in the diabetics. More recently Meyer, Bollmeier, and Alexander[238] report two cases of diabetes mellitus treated analytically. In both instances, the parallel studies of physiologic and emotional material gave evidence that the tension from frustration of strong passive demanding wishes was associated with an aggravation of the metabolic disturbance. On the contrary, when the tension diminished as a consequence of satisfaction of these wishes or when the demands were given up, the metabolic disturbance approached equilibrium. One patient improved to the point of maintaining his psychic and metabolic equilibrium, the latter without diet or insulin.

Attention has been called to various emotional problem in diabetics by Daniels[226] in a study of the value of brief psychotherapy as a part of the management of diabetes. He discusses the occurrence of "true" and "pseudo" shock, the latter consisting of anxiety attacks with symptoms similar to those of hypoglycemia. He regards both types as frequently being evidence of emotional disturbance and the associated autonomic discharge of therapeutic value in dissipating emotional tension..

Such studies of the dynamic relationship between the emotional element and the metabolic equilibrium, and the usual insulin and diet insulin regime, emphasize the value of additional therapeutic methods capable of affecting the patient and his illness. Another advantage not usually considered is the role of psychotherapy as a preventive measure.

Other aspects of diabetes mellitus which are influenced by the psychic component include the patient's reaction to his illness and treatment. In the first instance, this may take the form of depression or anxiety, or the patient may utilize the illness in his personality adjustments.[5, 223] In the second instance, the diet and insulin regime may seem too restrictive to the patient. There may follow a series of incidents of acidosis and/or insulin shock, depending upon the misuse to which the patient puts one or both factors. Frohlich,[281] in collaboration with Newburgh, studied a more lenient plan of management in such patients. He considered the reactions of the patients to their illness as part of a juvenile behavior problem, fitting into the personality expression, and not caused by the diabetes. In our own patients there is a notable frequency of such statements as "It was several years before I realized that I was different from other people. I didn't keep to my diet very well. I ate more candy than the other kids because I wasn't supposed to eat it." This patient, J.G., was 24 years old and had been diabetic for fifteen years. He had repeatedly misused both the diet and insulin in spite of (or because of) his "realization."

Lacking the opportunity or facilities for any more definitive form of psychotherapy, a greater freedom in management of the diabetes has been suggested[221, 247] in both children and adults. Bruce frankly states his doubts of the reasonableness of treating the diabetic as if he were a test tube in which certain chemical reactions of a predictable nature were taking place. He recognizes the childish conflict with authority and the feelings of insecurity as factors which readily influence the problem. Those physicians who have access to the help of child guidance centers can make use of their assistance in dealing with some of the difficulties of adjustment of the child and his parents to the fact of his illness, and its treatment.

The use of protamine zinc insulin, with the added insurance against acidosis which it gives, has led Tolstoi to present a less restrictive set of principles for the use of diet and insulin. He emphasizes: (1) Maintenance of weight. (2) Freedom from symptoms of diabetes such as thirst, polyuria, hunger, weakness, fatigue, pruritus, and visual disturbances. It should be kept in mind that as equivalents of anxiety, any of these symptoms may be largely of emotional origin as well. (3) Absence of ketones in the urine. Under these conditions glycosuria is felt to be desirable as its presence affords protection from hypoglycemic reactions. This latter conclusion has caused controversy because it is in direct contradiction to the traditional belief that glycosuria is not physiologic and is therefore, harmful, a belief for which there is no scientific evidence if the first three principles are adhered to.

It is generally recognized that many diabetics do not follow the more or less strict regime in which they are instructed. The patients then respond to the physician's subsequent queries with guilt and evasion or falsification. The results may not be apparent to the physician, but the relationship with the patient will suffer. On the other hand, the patient may adhere closely to a restrictive regime and react with resentment toward the physician. The patient, P. C., whose case will be discussed, had been placed on a diet of 60 Gm. protein, 60 Gm. carbohydrate, and 160 Gm. of fat. It was distasteful to her because of her liking for and previous indulgence in sweets and the psychological satisfaction derived from them. She followed the diet carefully and became so hostile to the physician, along with other emotional factors, that he referred her to the hospital with a diagnosis of "psychosis and uncontrolled diabetes."

The following group of patients were, with one exception, hospital patients. The first three (including the one outpatient) came to treatment because of "nervousness" in one form or another. The rest were admitted because of a disturbance of the metabolic equilibrium related to difficulties in insulin and dietary control, The relationship of these latter difficulties to the personality reactions is of importance.

Case I.—L. G., a 48-year-old married white male of Jewish extraction. He is a short, heavy-set man with spare brown hair, heavily greyed. He is cooperative and pleasant, willing to talk. He came into the hospital after asking for admission three weeks previously "for check on metabolism. I couldn't carry on with poor vision, bad general health, and extreme nervousness."

The patient was the third oldest of four children. He was born in New York and lived there continuously. Up until the time of his marriage he did practically no traveling outside of the city.

The father was born in Hungary in fair economic circumstances. He attended a Gymnasium where his schooling "probably corresponded to high school." He came to this country at 20 years of age in 1882. He met and became engaged to his wife in Hungary but married her in the United States. He had no trouble with citizenship, as he spoke English as well as Jewish, Hungarian, and French. "Father looked up to Mother. He followed her directions, never questioning her judgment in finances. He was very trusting of people. Mother and Father got together on finances each week. He was a custom tailor and did not make much money. Father was a Republican. He liked to talk European politics but Mother would tell him to forget the old country; he was in the U. S. now. I was the first to break the chain when I came of voting age and voted Democratic." "He rarely punished us physically. He whipped me a couple of times but he would call us names in several different languages and holler at us." He died in 1927, the year the patient was married, at the age of 65, "of several diseases, heart, kidneys, and grief over the death of Mother six years before."

The patient was deeply attached to the mother. She had had a better education than the father, "the equivalent of a college education." "She was very intelligent. She handled the children; in the family Mother was dominant. I held her up as a superior intellect. I was her favorite." "She handled the money. Mother and Father never had any fights; they had arguments but he looked up to her." She died of cancer in 1921 at 57 years of age. "The doctor said it might have been due to grief over my leaving in the Army. I felt it very keenly for a number of years. I was always a home body." When giving the date of his mother's death, first he said November 26, then changed it to "just after Labor Day. I was thinking of my mother-in-law. I used to call her Mother."

He had two brothers and one sister, one brother older than he. "They were always on the go; we had no tastes in common. I was always a home body. After Mother's death Sister used to say, 'Get over being a kid,' because I missed my mother so."

There was nothing outstanding about his schooling except that he left school after 8A because of finances. However, he continued at evening high school until graduating and then went to City College for a year at night taking advanced bookkeeping. "I wanted to get a good job."

He began working at the age of 14 for his father as a delivery boy, and then for an optical house running errands. He was advanced to an office job. After two years he left because they wouldn't advance him further, and got a job as stock clerk in a mail order house. "A year later I was in entire charge of shipping and receiving. I left there to go into the Army in 1918." After returning from the Army he worked for the New York Central for twelve years. In 1933 he changed to a better paying job with a sign company. The company went bankrupt in 1936, and the boss asked him to stay at a very low salary. He stayed until he found the boss was using money for things he considered unwarranted. He left and sued the boss and won a judgment. The boss went through bankruptcy again and eliminated the claim. From then on, the patient changed jobs frequently.

He described himself "as a wild kid" in contrast to his earlier statement. He was "always being brought home by the doctors all bloodied up." "One thing I'll always remember. When I was six years old I was playing tag on ice wagons piled on the dock six high. I was pushed off into the water. They pulled me out with a boat hook after I had gone down for the third time. They had to resuscitate me and take me home. Father beat me up plenty." The usual punishments he described as, "They deprived me of foods that I liked, fruits, sweets, especially bananas."

He thinks the diabetes is due to being deprived of sweets for a long time in the Army. "I was deprived for three months during the Argonne push." "I received my draft notice June 15, my twenty-first birthday." "Going into the Army grieved me a lot. I couldn't enlist for my mother's sake. I preferred to be home with mamma. I had never been away from home ever. I never got over the grief and homesickness of leaving my mother. I think she was with me even over there. I had a dream: I was in the Argonne and one day they asked for volunteers to bring some supplies up to a forward post. I agreed to go up. That night I had a vision of my mother telling me not to go with the detail, and sure enough the entire crew was wiped out."

In the second interview while checking dates he remarked that after coming home he didn't go to work for twelve months (previously he had said six). Asked what the trouble was, he said, "I was just burned out." Then he paused for several seconds and reluctantly said, "I had been shell-shocked." Asked who told him he was shell-shocked he paused, then "I've never said anything about this to anyone before, but it was the constant firing. One day the captain gave some orders and I didn't hear them. The captain sent me back of the line. I couldn't hear anything for two or three weeks. Was in a base hospital for a couple of months." He felt that the other men carried on better than he. "It might have been due to flat feet." He was offered a chance to go to the rear, but refused. "Didn't want to lose contact with the regiment, miss mail, or lose privileges accorded to the company."

The mother died in 1921, eighteen months after he returned from the Army.

An insurance examination in 1927 at the time of his father's death, showed no sugar in the urine. A second in 1928 showed sugar, and a third six months later showed no sugar.

At the beginning of the second interview he said he had been reminded of something by his wife. It concerned "financial losses between 1929 and 1933," due to "dabbling in the market." He was very hesitant about continuing, but finally said, "Between my wife and myself we lost forty thousand dollars. My wife loaned about half of it to her brother, and he lost it. You wouldn't believe it but he lost one hundred thousand dollars." During subsequent interviews the amount lost by the patient and wife reached eighty-four thousand dollars. He was very hazy about the details. Most of the money lost was his wife's savings of over eighteen years. "We took it hard but used what we call our Pollyanna philosophy. It could have been worse. Naturally I was criticized. My wife thought I shouldn't throw good money after bad. When I say criticized, I mean remonstrated. I wanted to make a lot of money quickly for my wife."

The symptoms of thirst and excessive eating appeared in June, 1933, after the financial losses had apparently reached their peak. His attention was called to the symptoms by his mother-in-law. "The doctors found sugar and put me on a diet. I was pretty careful, well maybe I'd better define that, I mean half careful."

In 1935 he was started on insulin, 45 units standard, daily. It was gradually decreased to 35 units. He is now on 30 units of protamine zinc insulin daily.

In 1941 he began having "dopey spells when out in company. I'd be sitting there and just go to sleep. It bothered my wife. She can't get reconciled to it." In 1942, "or earlier" he began to notice nervousness, then irritability, and a shaky feeling while waiting for trains to and from work. This progressed and he noted weakness and tiring of the legs in 1944. In October of 1944 his vision began to blur. He went to an ophthalmologist who told him he needed medical treatment.

When first told that he had diabetes "I felt like the devil. I read all the books on it. The more I thought of the word diet, the more I would resent anything like that; I've always been resentful of restrictions. And to have to stick myself with a needle every day. The whole thing just riled me. Even to the present day." "Felt it mentally and physically, but I think I have common sense enough to know that I must." "My mother-in-law read the riot act to me, and warned me to be careful. My wife felt bad. She thinks it is due a lot to carelessness on my part but she is cooperative. She thinks it isn't entirely my responsibility."

This material was spontaneously given in the second interview after that concerning the financial debacle, and at the end the patient's vision blurred and he became dizzy and had to rest. His blood sugar was 160 mg. per cent.

His recollections of the development of his sexual ideas are vague. He thought he had no ideas as a child of the differences between boys and girls. He always played with boys and they had no sexual discussions. He knew nothing and can recall nothing of masturbation. When about 16 or 17 he heard older boys and his older brother discussing dancing, drinking, and sexual activity. "One of the boys declared 'It would burn a man out,' and I believed him and still do." "I'd like to sit and talk to the girls once in a while. They'd be in our company. We never went out with them." He kept referring to "we" and said he meant himself and his "boy friend." "I had high ideals of women, probably due to my feeling for my mother. I could only feel friendship. Their families knew I had no ulterior motives so they could accept me as a real friend. The girls used to say 'Don't worry about G., He won't hurt you.'" He laughed and said he "didn't believe in the double standard."

He met his wife in the subway when he was 30 years old, in 1927. "She looked so little, wet, and bedraggled among those big Negroes, I got up and gave her my seat. I followed her home and was warned off by her parents. It made me anxious to fight the opposition. She was engaged to a son of wealthy parents. I called him the pampered darling." He was married six months later. "At the wedding I changed it to love, honor, and protect. The first time I saw her and ever since I have wanted to protect her." "My happiness started when I got married." Concerning the sexual relationship he said, "The pinnacle of happiness is a perfect communion between man and wife."

His wife had an excellent job soliciting advertising and made almost twice as much money as he did. "She used to say it was a mark for me to shoot at. She'd tell me that while she sat talking to some big executive she'd wish I was sitting there in his seat at ten to twelve thousand dollars a year."

There have been no children. One pregnancy was terminated by miscarriage at five months. "The doctor said an operation was necessary; she could have children after that only at the jeopardy of her life. To Hell with children, my wife is more valuable."

In speaking of his social relationships he said, "I got along well with the children, everyone. I never remember having an enemy, not even in a friendly way. Never had any fights, maybe an argument, but no fights. I ran around with a gang as a boy. No close friends except one boy with whom I felt close because of our mutual athletic prowess." This relationship has continued for thirty-five years. "I went around alone or mostly with this friend. We were very close."

Bed wetting continued up to the age of six. "I think I was shamed into it, or out of it. Sister said she would tell the teacher. That scared me out of something. Mother and Father objected, thought it was pretty bad on my part. When five years old they put me in a corner for a couple hours and deprived me of some kind of sweet, but it didn't help." "Not due to parental failure, was it?" No nail biting or nightmares. His wife says he has been jumping around and talking in his sleep for the past two years. He talked a lot of his "craving for sweets." "Right after I was married I began to crave sweets. It seems to me I was kidded and criticized before that. I was always resentful of restrictions." This reminded him of his mother-in-law. He resents mother-in-law jokes, but said "She criticizes my craving for sweets. She thought it was lack of will power on my part. It may have been that. Something had to fill that void of craving. They could never understand where I could pack all that food away."

He had always liked athletics, especially noncompetitive sports. He thinks they helped to burn up all the food and sweets. His reading was varied, but he didn't care much for outlaw or shooting stories.

He described his parents' religious attitudes as "orthodox without being strict" and gave a long, involved definition of "strict." "I had no interest in it. My religion is to follow the golden rule. Religion is absolutely necessary for others but not for me." He believes in a higher being who controls destinies, but is sometimes disturbed by catastrophies such as war.

There is no family history of diabetes. The family health was described as good. "No one was ever sick, I'm the only one. I was, what would you say, gifted in that way." Since the onset of the diabetes he has had two accidents. Eight months ago he was hit by a taxi, thrown to the ground, hurting his ankle, but not seriously. Three years ago he fell off a ladder and skinned his left leg.

CASE II.—M. A., a 35-year-old white woman, married, came for treatment because of repeated attacks of what she first took to be hypoglycemic insulin reactions. Ultimately she was able to distinguish between those that were associated with hypoglycemia and those that were not. She was a very intelligent woman who remarked, "I can't stand inefficiency; if I'm going to be a diabetic I want to be a clever one." She later said, "I would rather forget about the diabetes. I want to be put on the right track so I can forget about it." She had discovered that she felt better if there was sugar in the urine. The reactions began on the previous Christmas day, and were related to receiving gifts. For several years she had been going away by herself for a week or so after Christmas to recover from a feeling of being fatigued and run down. "It seems to me that after Christmas I don't feel as well as I do the rest of the year." "At first I would always get the reactions after intercourse when taking protamine insulin. My husband used to say if he could sleep with me every night, I wouldn't need to take insulin."

The father had been diabetic and had died in coma in 1920, when the patient was 10 years old. From then on they had been poor, which she deeply resented. "Genteel poverty is very wearing." She was most closely attached to the mother who died in 1926 of "uremic poisoning."

The patient had gone through an art school. "I wanted to make money to get things, it was all settled that I would be an artist." During her art school work she had initiated a triangular sexual relationship with two men, one of whom she married after becoming pregnant. After an interval the relationship was renewed at the husband's insistence, "I did it because he would be more attentive to me afterwards." It continued for about twelve years until she stopped it because of the repugnance she had to the inebriated pleasure her husband received from watching.

They had been very poor, and this plus the pregnancies, care of the two children, and the unusual sexual demands made by her husband she felt to be unfair. This theme of unfairness and the resentment colored all of her relationships, and included the insulin syringe. "It is all right to feel upset by something someone does to you, but it is unfair to feel that way from injecting something." It had also led to thoughts of divorce.

Speaking of the onset of the diabetes she said, "I had started to work when I was nineteen and married at twenty. I stopped work when I was pretty pregnant. I had three pregnancies, two children close together, 1931 and 1932. The third one we did an abortion on in 1936. I was so tired and overworked, and had had a kind of shock. My sister had had a baby who was a hemophiliac. The abortion was done at five months. It was a horrid little thing, looked sort of like a baby. It didn't go off too comfortably. The afterbirth didn't come and the doctor gave me an ampule of something. He was sweating. Afterwards I was very tired." The diabetes appeared soon after this. The feeling of unfairness entered into her relationships with her doctors. In at least two instances it could be traced to the attitude of the patient. One of the physicians didn't realize what was happening and the other realized something was wrong, but didn't feel he could do anything for her. Psychotherapy led to improvement and a cessation of the reactions. with some readjustment toward her husband. It was obvious that he needed treatment also.

Case III.—L. McC. This patient was 50 years old and married. She came to the hospital for "diabetes, arthritis, and nervousness," and to have her teeth out in preparation for dentures. There was a moderate degree of depression which had increased at the menopause, for which electroshock therapy had been advised and refused. This patient developed a phobia about the barking of dogs following an insulin reaction, as described previously.

There was a very passive attachment to her mother with a marked hostility which led to an inability to be away from her for any prolonged period of time. The patient would begin to worry that something would happen to her mother if she left her even to walk around the block.

The diabetes came on after an eight-year period of tension in relation to her work as a seamstress. She began work as a dressmaker at the age of fifteen. After two years in one place she changed "to a very high class place that made dresses for the four hundred. Then I began to worrying and getting nervous and tired and had pains in my stomach. I was afraid I would make a mistake with the dresses." She was offered a raise and more of the same work by the forelady. "I went back to her and said I didn't want a raise but would rather work on something else where it wouldn't matter so much if I made a mistake, but she told me to take the raise, do the work, and go see a doctor. She took a lot of interest in me, sent me to her own doctor." During this same period she began having pains in her finger joints and shoulders. These increased also at the menopause, and there appeared some numbness in the fingers. Now, she says, "I can't hold a needle very long, my hands get numb. If I shake them for a while I can pick up my needle or book that I have been holding."

She had never had any close friends and had practically no social outlets. There was a marked degree of sexual anxiety.

She married a man eight years younger than she nine years after meeting him, and a year after her mother died. "I couldn't leave my mother. I wouldn't leave my mother for any man alive." She was frigid.

The other seven cases illustrate many of the problems that arise in the management of the diabetic patient. Three of the cases are presented in detail as examples of these problems and the personality pattern, along with the conflicts that give rise to the tension, anxiety, and depression preceding the appearance of the diabetes. In all but two of this group the diabetes began before the age of 14 years. Their present ages range from 15 to 29 years.

CASE IV.—M.K., aged 15 years. unmarried white girl.

This material is presented as obtained in the course of several interviews, and illustrates particularly how the patient's reactions to the hospital regime help to understand them.

This patient's diabetes was discovered six months ago. The present episode of diabetic acidosis for which the patient was admitted began two weeks before admission. She was at first treated in another hospital where they were unable to regulate the diabetes. She was sent here five or six days later. In speaking of the onset of the present illness, the patient remarked: "I had some trouble. I fainted in church, had a stiff tongue, and couldn't go to school I was so weak." Then she stated she had felt weak since September and had felt "awful." "I don't know how I ever got to school." The diabetes had apparently been under control during the summer. The patient had noticed that she could not take as much exercise as she had in previous summers. The urine tests were negative. She had noticed that exercise such as swimming and hiking would upset the diabetes. As a result she had restricted her activity. "I just didn't seem to take any interest in what was going on around me. I'd rather stay in the house and read."

The diabetes was discovered several days after school was dismissed in June, 1945. The mother noticed that the patient was drinking excessively, was unable to eat, slept a lot, and was very hypersensitive emotionally. "Nobody could speak to me. I'd start crying. I couldn't get along with anybody." She had noticed that she was "slowing down" in December, 1944. "Couldn't keep up with the kids. My appetite was tremendous, always yelling for everyone to wait for me." She then recalled that as far back as in the eighth grade in gym class she had a hard time keeping up. "Became a poor sport, lost my temper easily, getting kidded and kicked out of games." "In June I suspected that I had diabetes because of the symptoms of my relatives who have diabetes, but couldn't say anything about it because I was afraid I'd get my mother all upset. In December it seemed to hit me right in the face. I couldn't get over what a change in my personality."

In discussing her schooling further she remarked that she liked school very much, particularly physical education and general sciences. She likes sports, athletics, particularly baseball, swimming, hiking, and bicycle riding. Her father does not let her ride her bicycle over a mile from home, afraid she will get hurt. He is very strict about it "because I was the sort of kid who always got scratched up, he didn't trust me." She lacerated her leg on the bicycle and had to have it stitched. She also has been putting her knee out of joint as far back as she can remember. She broke a finger playing basketball. "I seem to be all arms and legs, falling over something, banging myself up."

She feels that her father is more strict than her mother. She relates this particularly to his refusal to allow her to go to parties and dances in mixed company. His refusal has irritated her, and she remarked on it repeatedly, calling it selfishness.

Discussing the onset of the present illness more fully, the patient remarked that it began two weeks before she came here when she fainted in church and had a stiff tongue so that she couldn't talk. She said it began when she went back to school in September, 1945. The patient had gone to a doctor for diet and insulin management when the diabetes was first discovered. When she started school she had four sandwiches for lunch instead of what her diet called for. Her mother did not see the doctor about her diet. "That's where she made her biggest mistake." When asked why she had four sandwiches for lunch, she replied, "I was hungry and demanded them." So her mother increased her insulin dosage 5 units and gave her four sandwiches. From then on her urine showed four plus glycosuria.

While the patient has been in the hospital she has developed pains in the muscles of her back, followed by a left maxillary sinusitis. She has had the sinusitis each year since the age of five. She remarked that it was early this year. It usually comes in January or February preceded by a head cold. At the age of 5 she had bronchial asthma during that summer, and was treated by elimination of feathers, cats, chickens, rugs, from the environment. There has been no recurrence of the asthma since.

The family history shows that there are two uncles and five cousins on the mother's side with diabetes. The last one developed about a month ago. Prior to that there was an interval of several years. In speaking of the mother the patient remarked that she is about 43 or 44 years of age, "in very good health, no illness that I can think of." The father is 53 years of age and has high blood pressure and heart trouble. He is a truck driver. They live on a farm but he prefers driving a truck since he says he is not a farmer. He had to give up a job a year ago because of ill health. At that time he was inspector of machinery in a defense plant and had to travel so far he was unable to keep it up. He had an accident with a gun three years ago when he shot himself through the hand.

Continuing her discussion of her school work, the patient said she made fine grades in school before she had diabetes. Since then she has had 2 C's and 2 F's. In the last year she decided she wanted to be a medical technician because of contact with some friends of hers who were medical technicians. She ascribes her poor grades to being too tired to study after getting home, and she feels like falling asleep in the study hall. This she has noticed since September, 1945. From December, 1944, her behavior in class was not good. She could not control her temper and was always being put out of class, but during this period her work seemed to be all right, according to her.

Concerning her reaction to the discovery of her diabetes, she remarks: "I was heartbroken at finding I had diabetes, to think I had something like that. At night I used to dream of huge ice cream sandwiches and my mother snatching them away from me. I always liked sweets." When questioned about dreams and nightmares following this statement, she said, "After my uncle was killed five years ago I was afraid to go into a dark room by myself. After a few months it cleared up until this summer when my grandmother died and it started all over again. I dream that they come back to life and talk to me, and after my uncle died I'd see him as he was when he died. He was my favorite uncle. A train hit him and the steering wheel went through his chest. I saw him die." The patient had this dream repeatedly with anxiety.

She is an only child. She likes to play best with her boy cousins. When they were not there she would play by herself. She liked dolls but was always more or less a tomboy. "I was pretty rough with them." In contrast to the previous statement she had made about her mother's health, she now remarked that her mother has been ill this fall since the grandmother died. "She had pleurisy, intestinal grippe, and everything. She was pretty upset by Grandmother's death. She was kind of nervous anyway, always excitable, loses her temper easily, father does too." "In the ways they should be strict, they're not. They give me everything I want which is wrong. But the things I need I can't have. I can't go to places that I want, dances and parties." "Father doesn't think I should dance with boys at the noon dances at school, one of those old-fashioned ideas. If it was all girls it would be O.K., but he doesn't want me to go with boys, says I can't date until I'm eighteen. Other girls go to dances and so forth, but I can't. They're the type of parents you can't come home and reason with. They just don't understand." "When I was a little girl, I was always getting spanked for something." "They are good to me and I know they love me." In all these discussions at this time the patient gives the impression that it was a very unhappy situation at home. She remarked that at times she couldn't tell what to expect, whether they would approve of her or disapprove of what she did. That there was something in this was emphasized by a visit from the mother, who insisted that she talk with the doctor, "So they wouldn't get the wrong impression from what M. tells them." The mother was seen, and the nurse and the social worker, as well as the physician, were all impressed by the hostility that the mother had for the child.

The patient was seen three days later and had been moved from the metabolism ward into the general ward to make room for another patient. She was upset and had been crying. She went to test her urine after she had been told that she was to be moved and found that it was four plus after thirty seconds' heating. She believed that being upset emotionally had upset her diabetes. She felt that she was being put out, that she was losing the close family-like relationship with the nurses and patients on the metabolic ward.

On the next night she had a nightmare of her Uncle David's death again. She woke up crying and felt depressed the next day. This was her favorite uncle. Following the dream the patient had an insulin shock.

She began speaking of her home life again and she said she never had been happy at home. This came out with reference to her feelings of being put out of the metabolic ward. "I was either being punished or being made too much over." She says this left her uncertain as to how to feel toward her parents. Two uncles and aunts also lived with them at their home and did the same thing. One aunt was a favorite, however, "I respected her. You had to. She was very good to me." There were thoughts about leaving home because she could not get along with her parents and uncles and aunts. She does not want to go home from the hospital because "Here people understand me if I get upset."

When next seen the patient had been told she would be in the hospital over Christmas. She says she doesn't mind because it wouldn't be nice at home. "With Grandmother dead they will all talk about her and the dead uncles and cry." She says this happens every Christmas. Somebody starts reminiscing about these dead relatives and everybody becomes unhappy. "It's not a happy time, everybody crying." Then too, the patient feels that since her parents are paying her hospital bill, she can't give them a "long list" of what she would want for Christmas presents. She still speaks of wanting to go back to the metabolism ward and describes it as more home-like than the big open ward. Other Christmases she has anticipated "because we had parties at school and it got you into the spirit. I've missed them this year, so I didn't feel much about Christmas."

The night of December 19, 1945, the patient had another insulin shock. She recalls no dream at this time. She still feels unhappy about not being back in the metabolism ward. One of the nurses there promised to get her back in "a couple days and nothing has happened." She recalls a dream now that occurred shortly after school started in September. It had to do with an operation to cure her diabetes but her mother would not let her have the money to pay for it. When she woke up, she said, "It was so real I was excited and disgusted that my mother wouldn't let me have the operation."

When seen two days later the patient said a nurse from the metabolism ward told her she might be back there in a few days. She went down to visit the ward this morning. She says she had another insulin shock this morning at 5:00 A.M. and did not tell the nurse until 6:00 "because I wanted to wait and get a blood sugar." This would prove that she actually had had a shock. During the last shock a nurse remarked, "It would be interesting to get a sugar," and the patient interpreted this as disbelief that she was having an insulin shock. She later told the nurse this, and the nurse disclaimed any intent of disbelief. The patient says this feeling on her part is due to criticism at home and school due to her hypersensitivity which she ascribes to an "inferiority feeling caused by the kids at school, beginning in junior high school kidding me about my looks, calling me bunny rabbit because of my teeth and kidding me about my pug nose." She feels that "all the other kids had nothing to criticize, all the girls were pretty." She was also criticized at home about poor grades and an aunt spoke critically and sarcastically if the patient mispronounced a word.

The patient was seen ten days later. She had been moved back to the metabolism ward without being told of it beforehand, and when seen immediately after the move she was weeping because "I didn't want to leave the other ward, the nurse and patients, particularly one little probation nurse who did everything for me." Her feeling about this was discussed; it apparently was that people whom the patient likes do things without consideration for her. She says this is the feeling about her home life, especially her father, "who just lives for me. I know he loves me so much and is selfish about it. He wants to keep me a little girl. That's why he won't let me go out with the boys."

When asked about her Christmas here in the hospital she said, "It was the best Christmas I ever had." Then later she said they had a good Christmas at home because her uncle was married. They hadn't told her about it until it was over because they thought she would be upset. She was angry at this, "Anyway, Christmas is no time for a wedding, but I would have liked to go to the wedding. A wedding would mess up the Christmas activities, the dinner, etc."

Two days ago the patient began vomiting. She thinks it is due to tomato juice which she had for lunch that day. She recalls previous similar upsets due to peaches, spinach, all of which, including the tomato juice, she likes. When it was suggested that food she likes upsets her in the same way as people she likes, she laughed and blushed.

She was seen two days later still vomiting. She says she feels all right now otherwise, that it was just the idea of leaving the probies on the other ward that made her weep. She later remarked that if the probies had not made her eat, the vomiting would have ceased sooner. The night after the vomiting started, the patient recalls a dream of her mother dying of cancer. The insulin shock came on and the patient fell out of bed. She remarked that her mother had been sick and upset over her being in the hospital. Any time her diabetes gets upset her mother gets upset. "I'll never forget when she first tested my urine. As she took it out of the water and it was brick red, the tears started running down her cheeks." "Any time I get angry, my diabetes gets upset. That upsets my mother, and when she gets upset that upsets me more. The other day when she visited me and saw the side boards on the bed she was upset."

When seen the next day the patient said she had recovered entirely from her unhappiness at leaving the general ward. She said that the second night on the metabolic ward the nurse had wakened her and she thought she was still on the general ward and looked around for Barbara, a patient who had been in the bed next to her, and asked the night nurse to come and visit her. In discussing her feelings about being on the large ward, she said that "My probies are very faithful" and came to see her every day. When she moved back to the metabolic ward she said she thought it was dark and dingy. She says improvement in the vomiting began when they stopped "forcing" her to eat. The improvement had been marked and progressive since her return to the metabolic ward. The glycosuria definitely improved without sufficient change in the insulin dosage to account for it.

When last seen the patient had been transferred back to the general ward. She had volunteered to go back when a new admission came in, making it certain that someone would have to leave the metabolic ward. For the first time she speaks of the urinary incontinence which has been present during hospitalization. She recalls no enuresis. She mentions also the delayed menstruation which is now twenty days overdue. She had some abdominal pain which was connected with her concern over the delayed menstrual period. She thinks it would be very strange if it stopped; it would make her different from other girls. Then she speaks with embarrassment of the bed wetting "like a little girl." It occurs when she is asleep or excited. Reading a book which she likes "because it is bloody" and "has some suicides in it" excites her and she urinates in bed. Last night she thinks the enuresis was due to getting excited after laughing a lot at on old woman in the ward who raised a fuss because the door was open. "She wanted to have her own way, and she usually does but this time she didn't. I laughed so hard the nurse stuffed a mask into my mouth to stop the noise."

Then she remarked that the doctors had told her she could go home. She wanted to go home.

This patient was very reticent and suspicious in the early interviews. It is instructive to see how this gradually disappeared so she could spontaneously speak of the enuresis and the menstrual symptoms. There was marked insecurity and dependence upon the environment, even for an adolescent. The extreme hostility and passive desires toward the parents, particularly the mother, are evident in the dreams, in relation to the diabetes and its treatment, and are seen in her everyday relationships with other people, especially the nurses.

Case V.—J. G., a 24-year-old white male, unmarried, was a small, pale, boyish-looking man, who was quite nervous. His speech was rapid and concise and his vocabulary very good. His intelligence was higher than average. He appeared to be conservatively cooperative, awaiting questions and answering volubly, continually playing with his lips while talking.

He was born in New York and has lived there continuously. He has a sister two years younger. The mother and father are living. There is no history of diabetes. The mother has been in bad health for the past few years. She had an operation for gallbladder disease in 1934. "She is more opinionated than my father, though I do not want to detract from her." He feels very close to his mother "because Father was away to work so much. He is the topic of conversation between us when he isn't there."

The father is 52 years old. He was shell-shocked in World War I and the mother has used this to curb the children. "She didn't punish us but would tell us we must be good so our father wouldn't have a fit." "He is not strictly religious. He has his own ideas but doesn't express them. He is terrifically fair and conscientious." He is proud that he gives no preference to either child.

"We fought as much as other brothers and sisters do, but since I've had diabetes I feel that Mother has paid more attention to me so I try to make it up to my sister."

He had two aunts, the older he called "mamma" in childhood, the younger he was "more fond of because she was more affectionate and younger." He resented her husband's treatment of her. "He was a renegade who left her with the children."

He did well in school, in the upper fourth of the class. Went through high school and a business course. He "gets a kick out of seeing boys do well outside of school who haven't done well in school. They get out in the world of men and money and get to work for success," which is "really gaining security, that is, money." After school he finally decided to get a job with a good company and stick with them and work up. His boss "is a good man, who started out as a messenger so is good to those under him." The patient gets along well with people in his work. It consists of making contacts. He is proud of his diplomatic ability to get people to like him. "Most people start out with the idea that they can get along with only 50 per cent of the people, but if you go more than half way you can get 90 per cent of the people to like you." He has had "chances at other jobs with big money and responsibility, but I'd rather stay where I am and be safe in a job for which I have good experience than take a chance at a quick success that I couldn't hold up after the war."

He is quite sensitive about his small stature and youthful looks. "Sometimes people are surprised when they meet me after doing business with me over the telephone."

He recalls no illnesses or accidents until the onset of the diabetes in 1930, when he was 9 years old. He had had a tonsillectomy seven months earlier and there was no evidence of diabetes then. In 1930 he was playing in the street and was hit by an automobile. "It wasn't a serious accident, just hit me in the stomach. I became hysterical, that is, people said I wandered around in a daze." The doctor found glycosuria at this time. He was on a qualitative diet for about a year during which time he had "attacks of dizziness, weakness and faint feeling when I was in school, church, or any closed place. I felt like I had to get out for air."

In 1931 he came to Babies Hospital where he was put on a weighed diet and insulin. He had no more attacks of the dizziness, or other symptoms. In spite of the diet and insulin and biweekly trips to the doctor, he didn't follow the directions carefully. "Had acidosis and shock a couple of times. There were lots of ups and downs." There have been at least nine hospital admissions, most of them for acidosis, and most of these related to breaking diet. In the summer of 1937 he had a severe shock with amnesia as described earlier. In 1943 he joined the State Guard and became company stenographer. He had an attack of pleurisy a few days before they were to leave for camp. He went to camp anyway, and on the second morning when he got up he fainted. He was taken to the Peekskill Hospital with acidosis and pleurisy where he remained for four or five weeks. In February, 1945, he started out to go see his girl in New Jersey. Got on the train feeling dizzy. Changed to the wrong train in Newark and when he regained consciousness he was in the Trenton Hospital recovering from an insulin shock.

The present admission occurred on March 5, 1945, early in the morning for acidosis. He had been on a party with his girl and at 3:45 ate a "Western sandwich that had everything in it but the kitchen sink and made me sick to my stomach." He stayed at the girl's home that night and in the morning the mother took him a big breakfast. "I didn't feel like eating but I couldn't let them down." Nausea and vomiting occurred and his throat became sore, which he thought was due to vomiting, but was told in the hospital it was a "strep throat."

At the time the diabetes was discovered he felt "shocked because my mother cried. I didn't know what it was. It was several years before I realized that I was different from other people. I didn't keep to my diet very well. I ate more candy than the other kids because I wasn't supposed to eat it."

He was quite active in affairs in high school. In grade school he recalls that he had many fights. "I'd look around and pick the boy who had had the most fights and I'd fight him. Sometimes I'd lick him. I was never licked, I'd stop if things didn't go right." He has tried to get people to like him but "If I find I can't like them or get them to like me, it feels good to dislike them." Practically all of his social contacts have been in business with men, very few with women.

Speaking of his sexual ideas he said, "I learned most of what I know from reading. I read a lot and picked up an item here and there, even though I wasn't actually looking for sexual information." The family attitude has been one of ignoring the whole thing. "Never went out much with girls, and no steady girl until last summer when I met a girl at the seashore. I go down sixty miles now and then to see her. Would like to marry her but I won't while the war is on." He doesn't think it is fair to indulge himself in this while other men are away fighting. He likes the girl because of her attitude toward her family. "She is beautiful but she is just like a child in her relations with her family but can act grown up with other people." He has had no sexual relations. In speaking of masturbation, he said, "I didn't know anything about that until I was 15 or 16. I tried it once and was horrified. I was never caught at it but my father had a talk with me. I don't think he knew about me and he was very fair. He wasn't as radical as the church." When he was 14, "I got in a conversation with some boys about it (nail biting). I didn't think it could be done but I tried it and kept my nails bitten down for a year. Then I thought it was childish and quit." He recalls some nightmares as a child. "My mother said they were always due to my eating something. They were usually about climbing up a wall. I couldn't get to the top. I'd wake up screaming."

He has very strong religious feelings. "I believe there is a God and I think one gets on better with people who do believe in God and have a religion. I think religion is necessary for people." He feels that control of his feelings and actions is important. "I used to get angry when I was a child in an argument with another boy. I'd start to tingle all over and I'd hit him before I'd figure it out. Then I changed. I don't know when or why, but I feel control is important." He reads a lot. It is his main interest outside of his business efforts.

In this patient the passive attachment to the father is more evident than that to the mother. It is seen in his relationships with his associates in his attempts to win friendship and liking by going more than half way to do so. Dunbar has called attention to the greater interest in religion that was seen in similar patients in her series. She did not remark on the compulsive aspect of the character as seen in this patient.

CASE VI.—P. C., a 29-year-old divorced white woman, came to the Diabetic Outpatient Clinic, having been referred by her home physician for control of the diabetes. The patient is above average in intelligence, with an excellent vocabulary, although she left school before finishing the last year of high school.

She was born on a farm near a small town in Oklahoma, and alternately lived on a farm and in small towns until she went to Amarillo, Texas after leaving school. A woman friend had written that there was a job there for her, but when she arrived the job was not available, and so she began work in a restaurant. She says she would like to become a dietician, that as far back as she can recall she has been interested in food and its preparation.

The father is 53 and the mother 52 years old. Both are living and well. There are three brothers, one younger than the patient. They are all married. The mother and father live on a farm at present, and are not in good financial status, though they can help the patient at present. The patient has two children, a girl born in 1937, and a boy born in 1942. One miscarriage occurred in 1939.

The patient is closely attached to her mother, saying that although "She doesn't do anything to show it, I know she it partial to me." She recalled that she was jealous of the younger brother in this relationship as a child. Even if her mother had given her something, and then gave something to the brother, she was jealous and wanted the same thing that had been given to him.

Her attitude toward her father she states as, "I love my father very much, he does me too, but whenever he says anything cross to my mother, I hate him." With reference to this, she remembered that when she was about five years old she had seen her father fall into a creek while drunk. He was unable to get out, and she was "paralyzed" with fear because "I couldn't do anything to help him." Later, she recalls that they were very strict about themselves going to church, and expected her to do so also. Going to moving pictures was discouraged, and later in high school she was made to feel very guilty by her father's attitude toward going to dances. She speaks of it now with hostility.

She did not have any close friends in school, and no "real dates." She recalled an instance when she was walking home with another girl and two boys asked to walk with them. They stopped along the way, and because the boy with her "got fresh" she went home alone. She has very strict ideas concerning heterosexual relationships, marriage, and divorce.

She was married in 1935 to a taxi driver whom she met at a dance in Amarillo while working there after leaving school. She describes her life then as very happy, and herself as "light hearted." A year after marriage she became pregnant. In the fourth month of the pregnancy "I was on my way to work, and I didn't have any reason to and it was out of my way to do it, but I walked to the tavern. There was my husband sitting in a car with another woman drinking beer. They weren't drunk. I just told him he ought to go home." She became more and more suspicious of him, but "I wanted to believe his stories, I guess, even though I knew he was lying I would believe him." A second pregnancy was followed by a miscarriage before the patient realized she had conceived again. A third pregnancy in 1940 caused her husband to become very angry when she told him. He had accused her repeatedly of going out with other men, and remarked that she paid the doctor to get her pregnant. Three months later she left him to go home. After the birth of the baby, she went back to him again. The marital relationship from then on was a series of drunken acts by the husband that made her feel degraded and intensified her hatred for him. When the relationship of emotion to the occurrence of diabetes was mentioned, the patient said, "Yes, I know the day it started." She had reference to an incident that occurred soon after she returned to live with her husband. She again "without reason" wandered into a cafe while shopping and found her husband and another woman together drunk. The fact of their being drunk seemed to be of special significance to her. It had the meaning of "being degraded." She noticed that from then on she wept more easily, and "I'd eat, eat, eat." She began to feel guilty about drinking coffee, six to eight cups a day, and smoking more than she ever had before, especially when her husband "caught" her doing it.

In December, 1942, she had the "flu" and did not recover rapidly, tired easily, and began having attacks of severe hunger, weakness, and shakiness which she found were relieved by eating sweet things. "I never ate so much jam before in my life." In April, 1943, she noticed the polyuria and increased thirst. She went to a doctor for "trench mouth" and he found she had diabetes. Regulation of the diabetes was followed by recovery from the mouth condition. The diabetic state was very labile, especially susceptible to emotional disturbances with her husband. She spoke to him repeatedly of getting a divorce, until he would jeer at her because she hadn't done so. She finally obtained a divorce in July, 1946, though she remained to nurse her husband after an elective operation, which he had "just so he'd have some one to take care of him." She described her idea of marriage as "being forever," and her divorce "ended everything." She was very depressed, and angry at her husband. She returned to her parents' home with the children. A menstrual disturbance occurred at this time with excessive bleeding. She had begun menstruating at 14 years of age, stopping after the first period for six months, and then continuing more or less regularly, varying as much as two weeks. The last normal period occurred September 25, and during it she was riding with her father one day in their car when a thunderstorm arose. There occurred a severe anxiety attack during the storm, and after the anxiety subsided she felt much better. The next day she was weak, tired, and found that the urine sugar had increased to four plus. The marked glycosuria increased, and the symptoms progressed until she went into a hospital where her blood sugar was found to run between 350 and 400 mg. per cent. The physician placed her on a diet of 60 P, 60 C, 160 F, with forty units of protamine zinc insulin. The patient objected to the diet, but also to the "stubbornness and lack of feeling" on the part of the doctor when she asked to have it changed. Ten days later the blood sugar was still running between 300 and 400 mg. per cent and she was referred to the University Hospital for regulation.

The course of events in this history illustrates the appearance of diabetes as part of the progressive failure of adaptation. This was apparently initiated by a failure of the compulsive sexual adjustment that the patient had made in her marriage. The remarkably weak ego functions were unable to cope with the resultant anxiety which continued to mount and prevented satisfactory stabilization of the metabolic equilibrium, especially after the peculiarly related psychic trauma of the thunderstorm. Attempts to "manage the diabetes" were not sufficient. Psychotherapy in some form, even as hospitalization, care by the nurse, and contact with an understanding physician would be the least that would help.

The immediate problem in this patient's disturbance was the extreme hostility and anxiety of which she was partially aware and which she could not handle. She was afraid of it because of its intensity and inherent destructive meaning. It was focused on her husband but diffused to all men. Her father was of course involved. There was a gradual dissipation as it was refocused on the physician. During this time the diabetes remained out of all control with a glycosuria of two to four plus throughout the day and fasting blood sugars ranging from 120 to 400 mg. per cent on 50 units of protamine zinc insulin daily. There was never any acetone or other evidence of acidosis. The day after the patient talked of her fear of storms and the content of this fear, she felt much better and expressed the content of her destructive wishes toward her husband. There was a remarkable change in the patient's mood following this. The glycosuria decreased to zero in the morning and she began having hypoglycemic reactions.

Arrangements were made through the social service department for an opportunity for the patient to acquire the training that she expressed the wish for in order to be able to support herself and her children. This latter move was obviously necessary in order to give further stability to the patient's life.

The difficulties then encountered by the patient in her work, both outside and in school, were clearly those arising from a difficulty in accepting the responsibilities she was expected to assume. She did not maintain an adequate relationship with her counselor in the rehabilitation agency. She was not able to work with a teacher who expected her to do something differently from the way she wanted to do it. In her work outside she was unable to get along with the women in whose homes she worked. There was constant hostility. There was a constant expectation of special consideration, sometimes rationalized by the requirements of a rather lenient diabetic regime, at other times simply denied. The hostility became marked when demands were made on her in her work, in her schooling, or in her treatment. It was most frequently expressed masochistically. Satisfaction of her sexual demands in a visit by her former husband was followed by the disappearance of the glycosuria and the occurrence of insulin reactions.

The patient ultimately returned to her husband and two children. In a recent letter she stated: "We are very happy together now. But, then, maybe I am a little different, too." Her diabetes is more stable and she is working hard.

Spontaneous Hypoglycemia

Metabolic equilibrium is the result of the interplay of many factors, and spontaneous hypoglycemia is a biochemical phenomenon resulting from a disturbance of this equilibrium. A definition of the occurrence of this disturbance is closely related to our knowedge of its causes. Duncan[228] differentiates hyperinsulinism from spontaneous hypoglycemia on the basis that excessive insulin formation has been proved only in cases of adenoma of the islet cells and may be inferred in severe cases where there is no anatomic basis. In addition, there are other factors involved in maintaining the storage, movements, and utilization of glucose. Wilder[266] defends his approach and its negative implications, that excessive insulin secretion in the absence of demonstrable pathology of the islets does not occur. Other pathological conditions associated with hypoglycemia include faulty diets, diffuse hepatic disease, unusual endocrine disturbances such as Addison's disease, and pituitary destruction, tumorous or otherwise, and what is termed "nervous hypoglycemia."

It is generally recognized that the major number of cases exhibiting spontaneous hypoglycemia have no obvious dietary factor, and no anatomic basis to suggest excessive insulin secretion or to explain the disturbance otherwise. However, there is some evidence that the secretion of insulin from the anatomically normal pancreas is not necessarily fixed, but may be variable under both humoral and neurogenic influences. Portis and Zitman,[261] Himwich,[259] and Darrow[255] summarize this evidence from the experimental data in the literature, and contribute evidence from their own studies to support this hypothesis. The data suggesting neurogenic control include (1) the anatomic demonstration that the islet cells are supplied with fibers from the right vagus; (2) stimulation of the right vagus decreases the blood sugar, a phenomenon that occurs only when the pancreatic vein is intact and not ligated; and (3) drug stimulation of the parasympathetic system produces a fall in blood sugar level in rabbits except when the vagus is sectioned. On the other hand, there is evidence to suggest very strongly that the pancreas can secrete insulin with all extrinsic nerves removed, and that alteration of insulin secretion may be directly affected by the blood sugar level. Himwich[259] considers the control of blood glucose levels to depend on the balance of action of the "parasympathetic-insulin" system and the "sympathetic-adrenal" system in conjunction with pituitary and adrenal cortical functions. The parasympathetic-insulin system is activated by a rising blood sugar. Zunz[259] attributes this to a stimulation of the hypothalamus and medullary centers by the rising blood sugar, giving rise to impulses along the parasympathetic (vagus) fibers which supply the islets, causing their stimulation and an increased insulin secretion. This hardly seems probable since there is no other evidence of parasympathetic activity by which a rising blood sugar can be recognized. The work of Gayet and Guillaume provides a more direct explanation, that the islet cells respond directly to the rise of the blood sugar with an increased insulin secretion.

The neuroendocrine defense against low blood sugar levels is more complicated, and more important because of the greater immediate danger of hypoglycemia to the organism. The sympathetic-adrenal system is stimulated by hypoglycemia. Himwich[259, 261] interprets the evidence to suggest a synergistic relationship between this system and the thyroid and posterior pituitary to release glycogen from the liver, and the anterior pituitary and adrenal cortex act to diminish glucose utilization. Darrow[6] sums up the present knowledge in this way: "Then blood sugar must be added to the list of indicators which must be interpreted as the resultant of a balance of opposed forces," referring to the interrelation of the autonomic and endocrine systems in this respect. Soskin and Levine[245] have reviewed the present status of our knowledge of endocrine-hepatic activities in the control of carbohydrate metabolism. They interpret their evidence to suggest that insulin secretion is relatively constant, and that the blood sugar level depends primarily on the liver, and is further controlled by the opposing influences of the pituitary, adrenal, and pancreatic hormones. Further study is necessary to define the functional interrelations of the endocrines, the liver, and the autonomic nervous system in this phase of carbohydrate metabolism.

In their study of fatigue in neuropsychiatric patients, Portis and Zitman remark that "since the pancreas is an end organ and subject to vagal stimulation, we felt that it was logical to assume that hypoglycemia of psychoneurotic patients was due to a long continued stimulation of the right vagus nerve. This is based on the hypothesis that emotional processes occur somewhere in the higher integrated cortical centers and that the emotional impulses first go through the hypothalamus and are relayed to the autonomic nervous system, both sympathetic and parasympathetic systems being involved. . . . These patients who are depressed would have a more constant stimulation by these emotional factors going through this pathway." A study of intravenous glucose tolerance of these authors' patients before and after blocking the vagus action with atropine demonstrated an alteration of the tolerances from a flat form to one near normal. They concluded, on this basis, that "continued vagus stimulation in the psychoneurotic patient was an important factor in producing functional hyperinsulinism and concomitant hypoglycemia."

The concept of spontaneous hypoglycemia has been further enlarged to differentiate between two forms, one in which the blood sugar drops to levels usually accepted as hypoglycemic. This may be termed "absolute hypoglycemia" in that these levels are definitely below the lowest limits of the normal range. The second is spoken of as "relative hypoglycemia."[251, 258, 263] In this instance the blood sugar is considered to be low relative to the tissue requirements. It is suggested[257, 258] that symptoms occur, in part, because while the absolute level of blood sugar is not low, the adaptation of blood sugar level to actual needs of the tissues is disturbed.

There is apparently a more consistent relationship between the degree of hypoglycemia and the intellectual and neurologic manifestations than there is in the case of emotional reactions. Discrepancies have been noted by Romano and Coon[263] in the correlation of blood sugar levels and the intensity and type of symptoms. The variables they considered were (1) the rate of reduction of blood sugar level, (2) the possible lack of significant relationship between blood sugar levels and rate of tissue utilization, and (3) spontaneous improvement in symptoms without change of blood sugar levels, possibly due to "an epinephrine compensatory reaction or to more complex reactions associated with intermediary carbohydrate metabolism."

In this connection, reference should be made to some observations made by R. B. Gibson* on a patient in the laboratories at the University of Iowa. This patient had previously had severe spontaneous attacks of hypoglycemia. He ultimately came to be able to stand blood sugar levels as low as 15 mg. per cent with only slight euphoria or depression, flushing of the face and conjunctivae, with some lachrymation, and headache. He was able to continue at these low levels for ten to twenty minutes and still take his own blood sugar with a capillary blood pipette. More recently Harrison and Finks[258] have remarked on this phenomenon and described it in three of their patients. They list five conclusions from their observations. "(1) Certain persons may have symptoms of glucose deficiency when the blood sugar is normal. (2) Other persons may have extremely low values for blood sugar with minimal symptoms. (3) Relief of symptoms may occur with only slight increase in blood sugar. (4) In a given patient, there is very little parallelism between the level of blood sugar and the severity of symptoms. (5) Symptoms of glucose deficiency are more likely to be related to rate of decline than to the absolute level of blood sugar. (6) Glucose deficiency, when induced by insulin, is [more] likely to be associated with lower levels of blood sugar than when it occurs spontaneously."

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* Personal communication and observation.

The symptoms of hypoglycemia depend upon disturbed function of the nervous system, and are of two types depending upon their origin in the dysfunction of the two major divisions, cerebrospinal and autonomic. Those related to the cerebrospinal division include alterations in intellectual, emotional, and motor behavior. Physiologic studies have demonstrated a diminished oxygen utilization by the brain, which has been interpreted as being due to a lack of substrate. Himwich[259] has shown that there is a general correlation between decreasing glycogen content of the various cerebrospinal levels and the intensity of the symptoms of disturbed function of these levels. Electroencephalographic studies[254, 264] disclose an increase in slow activity in the tracings made during hypoglycemia. The changes observed were interpreted as an accentuation of previously existing dysrhythmic tendencies.

In minor attacks of hypoglycemia the psychic changes may not develop fully. They consist of a mild dullness of consciousness, weakening of concentration, mild hampering of the thinking processes, and difficulty in making decisions. There is frequently an anxious or depressive mood, and occasionally irritability and negativism. There is a general increase in intensity of these symptoms with the addition of motor activity as the attacks increase in severity.[267] Romano and Coon[263] observed that in their chronic fasting observations an intermittent appearance of emotional symptoms occurred with no change in the blood sugar level. Intellectual disturbances they attributed to the loss of awareness, generalizing ability, and dysfunction of the higher association centers, coinciding with the metabolic disturbance and more closely related to decreasing blood sugar levels. Wilder's[266] cases illustrate some of the psychological phenomena such as hysteriform attacks and twilight states with retrograde amnesia, as well as minor personality changes, which he regards as initiated by the hypoglycemia. Daniels[226] relates these emotional reactions in hypoglycemia to previously existing conflicts which were more or less repressed. The hypoglycemia weakens the repressing mechanisms and the emerging conflict gives rise to the emotional reaction of anxiety, depression, or other coloring typical for the patient. The patient studied so extensively by Romano and Coon reacted repeatedly in an aggressive and sadistic way. They explain these reactions as a release of these drives by the diminished action of the higher centers and resultant weakening of critical faculties. They draw a parallel between this physiologic concept and French's concept of weakening of the ego structure and its role in the defense of repression.

Two factors must be considered in connection with the autonomic division and the symptoms related to it. Cannon's work[77] has demonstrated the production by hypoglycemia of objective evidence of increased autonomic activity in animals. It is generally recognized that some of the symptoms of hypoglycemia in man are similar to those produced by sympathetic stimulation. These include tachycardia, palpitation, and elevated blood pressure. Increased activity of the stomach, with hunger contractions, and sweating are attributed to parasympathetic stimulation. In addition to what may be considered the direct stimulation of the autonomic system, there is the autonomic activity as a concomitant of the emotions released by the hypoglycemia. This may reinforce the direct effects of the hypoglycemia. The bodily expression of anxiety is that of the physiologic effect of autonomic stimulation, including tachycardia, palpitation, blood pressure changes, increased gastrointestinal activity, sweating, pupillary dilatation, pallor, restlessness, apprehension, and tremor. At times anxiety attacks occur without hypoglycemia in patients who also have spontaneous or insulin-induced hypoglycemia. It is understandable that this might be the case since the neurotic character structure is not proof against spontaneous hypoglycemia. The effects of the hypoglycemia on the psychic equilibrium would then aggravate the neurotic expression of the personality.

Heretofore,[3] the emphasis has been placed upon the production of psychic changes by the hypoglycemia. More recently observations have been made which suggest that psychic factors may be of significance in the production of hypoglycemia. If this should prove to be true it would provide an explanation for the self-perpetuating character, the "vicious circle of a psychosomatic nature" referred to by Soskin.[265] Donnelly and Palmer[255] report nine cases of functional hypoglycemia and state, "Two factors common to most of the cases were (1) all were working under conditions of increased stress or strain, and (2) with one or two exceptions they were nervous unstable individuals." Rennie and Howard[262] "call attention to a group of cases in whom the symptoms of hypoglycemia are prominent, in whom none of the organic diseases are present, and in whom the symptoms never appear in the fasting state but only after the ingestion of food." They noted that the occurrence of hypoglycemia with the production of symptoms after a glucose tolerance test was more common in those of asthenic habitus and of rather tense personality type. The attacks occur most usually two or more hours after the previous meal. Otherwise, their six cases were characterized by a relatively long standing psychological disturbance manifesting itself as "tension depression." The life history gave evidence of the various maladjustments giving rise to the tension. The symptoms included chronic fatigue, exhaustion, with lack of mental alertness, poor concentration, and punctuated by attacks of marked hunger, profound fatigue and weakness of the legs, vertigo and sweating, relieved by eating sweets. There was also nervousness, restlessness, tearfulness, and irritability, vomiting, sleepiness, and occasionally glycosuria following meals. The "episodes of hypoglycemia [were] sufficient to produce alarming and dangerous symptoms [such as when driving a car], occurring only after ingestion of food and never in the fasting state, exaggerated by exercise and promptly relieved by administration of glucose." With some "superficial psychiatric treatment" the tension and depression lessened and the patients' symptoms disappeared. The abnormal glucose tolerances returned to normal in those cases in which it was repeated after treatment.

Clinical studies by Alexander and Portis[251] originated in the earlier work of Portis and Zitman previously discussed. In an extended study of nine patients attention was given to the possible origins of relative hypoglycemia in the absence of demonstrable disease of the endocrine glands or other elements involved in carbohydrate metabolism. Clinically, these patients were characterized by apathy, a loss of zest, general let down feeling of aimlessness, a repulsion against routine of everyday life. Seldom was there an associated anxiety or pronounced depression. Chronic or intermittent fatigue was an outstanding symptom. Usually it was present on awakening, and increased by midmorning with some improvement after meals, becoming more marked by midafternoon, and practically always completely relieved after the heavy evening meal. There may be severe headache on awakening, and this may also occur in the midafternoon fatigue. Acute attacks of extreme weakness, tremulousness, sweating, and vertigo may occur. Correlated with this clinical picture was the finding of a flat intravenous glucose tolerance curve. The fasting blood sugar may be normal, low normal, or definitely below normal. Under the influence of atropine the glucose tolerance curve alters to assume a more normal form, and the clinical symptoms diminish. A high protein, high fat, and low carbohydrate diet usually has a similar effect.

There was no consistent personality type observed in this group of patients. The authors feel, rather, that it occurs as a certain psychodynamic constellation in certain life situations, usually with reference to a change in some external circumstance. The outstanding feature in the histories of these people was a loss of meaning to their lives when the cohesive effect of hope in continuing a particular occupation or attaining a particular goal that had made everything else meaningful was lost. The results are summed up by the authors in the following way:

> "When a person loses the hope of obtaining a cherished goal and gives up realistic efforts to rescue his major strivings and genuine interests from emotional shipwreck, when life begins to appear nothing but a sequence of meaningless exertion and killing routine, then the emotional sitdown strike sets in. . . This influences the vegetative nervous system balance. This manifests itself in a disturbance of the regulatory mechanism controlling the sugar concentration in the blood. This produces the asthenic symptoms, particularly the fatigue. Now a vicious circle becomes initiated. The fatigue favors the patient's tendencies to withdrawal, impairs his efficiency and discourages new effort to continue or resume his activities. The fatigue syndrome gives the patient a powerful secondary excuse for further withdrawal. Thus, the initial emotional situation in which the patient lost all his original interest in activity and life in general becomes reinforced by the relative hypoglycemic condition, or more precisely, by the disturbed regulatory mechanism of the carbohydrate metabolism."

On the basis of Cannon's work, the authors suggest that the disturbance of the autonomic equilibrium comes about through a diminution of sympathetic tone as a result of emotional apathy and lack of vigor. In further development of this hypothesis, they speculate that a decrease of sympathetic tonus on this basis would result in a relative increase in the tone of the parasympathetic system. There would follow a shift in the autonomic equilibrium to favor increased islet cell activity, and under these particular circumstances, a diminished ability of the organism to respond with an opposite shift in the equilibrium under conditions of activity and effort. The patient would be attempting activity while his autonomic and metabolic balance was adapted to a state of relaxation.

Medical interference with this vicious circle has helped not only symptomatically, but allows the patient an opportunity once again to assume the initiative in his psychological readjustment to circumstances. The authors feel that in this way it has helped to make psychotherapy easier and shorter. They advocate the use of (1) a high protein, moderately fat, and relatively high carbohydrate diet, the carbohydrate being in a complex form, given in six feedings, three meals and three lunches; and (2) 1/75 to 1/200 grain of atropine three times a day orally. In addition, small doses of thiamine chloride, 3 to 7 mg. and ¼ to ½ grain of phenobarbital three times a day with the atropine. Striking relief of fatigue and accompanying symptoms occurred in most of their patients under this regime.

The following account of a patient studied by us conforms rather closely to this description.

V. S., a 27-year-old divorced white female was referred to Vanderbilt Clinic by her physician with the diagnosis of "hyperinsulinism probably dependent on a pancreatic tumor." This diagnosis was based on an increase in appetite, some exhaustion, and a fasting blood sugar of 50 mg. per cent, rising to 90 mg. per cent one-half hour after glucose administration orally, and falling again to 54 mg. per cent at the end of two hours. She was depressed, timid, tired looking, and wept easily.

The medical history recorded after admission to Presbyterian Hospital described her complaints as "increased appetite of three years' duration, exhaustion, increased sweating, and loss of memory more pronounced over the past month." She appeared timid, tremulous, and tearful, speaking in a weak, hesitant way.

The patient was greatly disturbed and reluctant to talk about past events in her life. She was born in a small town in New Jersey. She described her childhood as carefree. The mother was full of fun, liked to go places and do things. Both parents, she felt, were very lenient. The mother died of tuberculosis when the patient was seven years old. From then on she lived alone with her father and she recalls that he took very good care of her and kept her very clean. She recalls him washing her hair. She was alone at home during the daytime when he went to work, and she was not in school. He allowed her to go to the movies every night and have ice cream whenever she wished. There was no certain bedtime and the patient recalls that she played freely with the other children. In connection with the talk of her childhood, she remembers that when she was a small child she went to the zoo with her mother. She got away from the mother and was found petting a lion cub. "The mother lion had the instinct to know that I was just a little girl." She started school at 5½ years of age and continued to the second year of high school, at which time she married and stopped school. She is very reluctant to talk about this period of her life.

At the age of 14 she married a man seven years older than herself. At the age of 15 she gave birth to a baby boy who died six weeks later of intestinal obstruction. From the age of 15½ to 17 she was separated from her husband. At the age of 17 she went back to live with her husband and his parents. She had to do most of the house work because the mother-in-law continually had something wrong with her and was unable to help. She speaks with resentment of the mother-in-law and describes her as dirty and unkempt, noting particularly that she did not wash and bathe and that her hair was filthy. She required the patient to wait on her as if she were an invalid. At the age of 19 the patient became pregnant again and gave birth to a baby girl who is now 8½ years old. It was during this pregnancy that she noted a marked increase in her appetite.

In the next period of one to two years, the patient continued to gain weight up to 180 pounds. She was unable to nurse the second baby because the breasts dried up in ten days. When she reached the point of 180 pounds, she was placed on a diet by her physician and given "pluriglandular shots." She lost forty-four pounds in one year. At this time the patient noticed, as did her husband, that her personality changed and she became irritable and nervous. At the same time her relationship with her husband became more and more disturbed. "We had known for four or five years that we couldn't get along. He drank, ran around, and did things that weren't so very nice. He was very nasty to me."

In January, 1943, the patient had an operation for "cysts and peritonitis." As soon as she came out from under the anesthetic she remarked, "I'm so hungry," and she dates her craving for sweet and rich foods from this time. This craving has increased steadily since that time. The patient noticed at first a periodicity of exacerbation beginning two weeks prior to onset of menstruation and increasing to a peak one or two days after onset. At first she was aware of hunger only before meals and then began eating between meals. Two or three months later she observed that she became very tense, nervous, and a little weak and tired when she was without food for only a few hours. These symptoms disappeared with eating, particularly sweets. Three years ago, soon after the operation, she and her husband "arrived at an understanding that he should divorce me for desertion." She explained this arrangement on the grounds that she wanted to avoid hurting the little girl by causing gossip in the small town where they lived. She received her divorce two years ago, and she left the little girl to live with her grandparents "because they could do so much more for her than I could. I would be miserable if she were with me." According to her, the decision for divorce was facilitated by advice from her physician that her symptoms were due to the upset situation with her husband.

The patient's father had been married again "seven or eight years ago, I forget just when." This apparently fell within the time of the patient's pregnancy or delivery of the second child and the onset of the symptoms of nervousness, tenseness, fatigability, and increase in weight. Following the divorce the patient was asked to remain with her father and his wife, but she refused to do so, saying that they both worked and she would only be in the way. She came to New York City by herself and got a job in a bank as a bookkeeper. Her symptoms did not abate. She changed her job thinking it was the environment in which she was working, in the basement of the bank. The change had no effect.

A year ago she had her first attack of "intoxication" in which she felt confused, disoriented, and babbled like a child, with an inability to use the correct words, drowsiness, and blurring of vision. This behavior occurred before meals and was relieved by eating, especially sweets. Later it appeared that this "intoxication" would occur after eating excessively of sweet things. The bank physician told her to take a trip to Florida and change her type of work. She had been sent to this doctor by her superior who thought at first the attacks were due to excessive drinking of alcoholic liquors.

On her return from Florida she obtained a job in a candy shop working full time for a week. It did not pay very much but she was able to eat as much candy and ice cream as she wanted. At the end of the week she was so tired that she had to stay in bed for two or three days. From then on she worked part time for two months. She then began work in a doctor's office as his assistant and it was this physician who studied her blood sugar curves and sent her to the clinic.

During her stay in the hospital many studies were carried out. The laboratory studies showed a CO_2 combining power of 65.4 volumes per cent; chloride 606 mg. per cent; sugar 71 mg. per cent fasting; a calculated sodium of 141.2 milliequivalents per liter; basal metabolic rate of —8 per cent. The urine on admission showed an amount of acetone varying from zero to two plus the first week; then it became negative.

On Nov. 21, 1945, a blood sugar taken during a "shock" fifteen minutes after dinner showed 122 mg. per cent. "At this time the patient gave the impression of being slightly intoxicated with a faraway look in her eyes, speaking with less exactitude, and in a rather silly fashion" (interne's note). There was no sweating or increase in pulse rate. The symptoms showed no immediate response to 200 cc. of orange juice. On Nov. 22, the patient had another "shock" about thirty minutes after dinner. Pulse 120, blood pressure 120/84. Twenty cc. of glucose intravenously had no marked effect, and twenty minutes later she was feeling a craving for sweets again. On Nov. 28, an electroencephalogram was reported as normal. On Nov. 26 the glucose tolerance test showed a fasting level of 77 mg. per cent. At one-half hour it was 119, one hour 121, two hours 80, three hours 39, four hours 60, five hours 69, and six hours 71. On Nov. 29, the patient was fasted for twenty-four hours. At ten hours the blood sugar was 69 mg. per cent, nineteen hours 84 mg. per cent, and twenty-four hours 74 mg. per cent. She complained of weakness, not much hunger, but was found lurching around the ward talking foolishly. She was put back to bed and spent the rest of the twenty-four hours sleeping.

She was placed on a diet of carbohydrate 100 Gm., protein 100 Gm., fat 120 Gm., with benzedrine 10 mg. before breakfast and 5 mg. before lunch. On this regime there was thought to be some improvement. However, when the patient was first seen in the clinic after discharge she still complained of weakness, depression, and great fatigability, pain in the muscles, "as if someone had been beating me," and marked sleepiness. During the interview she talked of Christmas gifts and the fiance giving her presents that she felt she should not take because of some guilt feeling about it. While speaking of this, she suddenly broke off and said, "My, I'm so hungry." After she left that interview she went downtown to do some shopping to buy some Christmas cards for people whom she knew, since she could not buy more with what money she had. She became very fatigued and went into a tea room and had five chocolate ice cream sundaes. She then felt much better but disturbed over the fact of breaking her diet.

On Dec. 21 she was started on atropine sulfate, 0.3 mg. three times a day before meals orally, by the same interne who had treated her in the hospital. On Dec. 23 she began to notice that she was feeling much better. When next seen on Dec. 26 she stated, "It is remarkable how well I have been feeling. I can't get over the loss of soreness over the whole body. I've been much more active. There is practically no depression or trembling of the muscles or fatigue." She had fixed herself a small Christmas tree in her room, and had spent part of Christmas Day with her father and his wife. She had not gone to see her little girl who lived a few miles away because she had developed a cold and did not want to give it to her. The physician who had been seeing her in the medical clinic was very much impressed by the change in her. Benzedrine was then stopped and the patient was seen a week later. She still felt well and had arranged for an appointment to get a new job. She thinks that without the benzedrine the craving for sweets returns to some extent, but that with the atropine, benzedrine, and diet she feels better than she has for the past "six or eight years," and that her appetite is "like a normal person's." Repetition of the glucose tolerance on Jan. 18, 1946, gave the following results: fasting 80 mg. per cent, one-half hour 131, one hour 127, one and one-half hours 108, two hours 83, three hours 68, four hours 72, five hours 77.

There have been some observations tending to contradict the findings of Portis and Zitman, and of Alexander and Portis. More recently Frank[256] studied a series of eighty soldiers whose complaints included weakness, fatigability, shakiness, headache, or episodes which it was felt might have been due to spontaneous hypoglycemia. The observations made in this study indicate that within the whole group, there was a group that confirmed the findings of Alexander and Portis. These patients, besides showing low half-hour rise after intravenous glucose, showed a significant increase of this elevation after atropinization. Weakness was the dominant symptom in this group in contrast to the rest in whom irritability was outstanding, and in whom higher fasting and half-hour values were obtained. The psychological attitude and reaction in the first group were of definite importance as an integral part of the picture. The author suggests that it may be significant that the six patients who showed subjective improvement, as well as a change in the glucose tolerance after atropine, all had a passively-accepting attitude toward the treatment. Of the other eleven in whom no symptomatic improvement occurred along with the alteration of the glucose tolerance, none appeared eager for treatment, and six were definitely resistant to improving. These observations should have been further controlled during a period with the administration of some medication that would have had no effect on the parasympathetic-insulin system.

The following instance illustrates the lack of symptomatic response to diet and drug therapy, followed by a more adequate response to superficial psychotherapy. The latter was suggestive that more intense treatment would have been successful.

The patient, D. C., was a 26-year-old white female who appeared quite depressed. She had been bothered by extreme fatigue, weakness, nervousness, and a feeling of unhappiness for the previous several months. This was accompanied by an erratic but ravenous appetite, especially for sweet things. Eating had little tendency to help the fatigue but seemed to allay the nervousness somewhat.

The patient was the younger by three years of two daughters in a family of rather poor circumstances. She had been in good health until her father left her mother for another woman when the patient was 16 years of age. She had been very unhappy about this, since she had had a close attachment to him in contrast to a poor relationship with her mother whom she described as nagging and critical. The father had been "rather shiftless but a lot of fun to be with." A week after the father left the home she had a severe shaking "chill or fit" after returning home from a dance. These shaking attacks recurred at irregular intervals. There was also some pain in the abdomen at this time and after repeated examinations she was operated on for appendicitis. There was no improvement following this operation. The shaking attacks and abdominal pain recurred, especially following some pleasurable excitement, usually dancing of which she was very fond.

She was married in 1942 to a boy a year younger than herself, following her first intercourse and subsequent pregnancy. The boy was not willing to marry her but she felt that she had to force him to do so. The baby girl was born at term and the patient became very much attached to her. Soon after this her husband entered the Army and she followed him from camp to camp until he went overseas. She then returned home where she lived with her mother and went to work as a waitress. During this time she met another man, who was stationed at a nearby Army camp. She liked him because he was "full of fun, liked to dance, and everything about him." She began drinking occasionally when on parties. A sexual relationship was soon established and continued until her husband came home. Then she wanted a divorce in order to marry the other man. Her husband at first refused; so she told him the details of her relationship with the other man. Thereupon he sued her for divorce and obtained custody of the child. While this was going on the other man was transferred elsewhere. The patient became depressed, began drinking again, and acquired a gonorrheal infection while intoxicated. The other man came to visit her before she realized she was infected and he acquired the infection. From then on he refused to see her or answer her letters. It was at this time that the patient began to notice the extreme fatigue, increased appetite, weakness, and nervousness. She had no means of support and when asked to do so by her divorced husband went back to live with him without being remarried to him. She described her feeling as being "sorry for him but I couldn't stand for him to touch me." She was constantly preoccupied with the unsolvable situation in which she found herself.

The family history indicated that the patient felt the mother was quite strict, and was religious. The mother had severe headaches for many years. A brother of the mother had diabetes mellitus.

Examination of the patient suggested the possibility of hyperthyroidism. A basal metabolic rate was reported as plus 10 per cent. The first glucose tolerance was done the morning after a gynecologic examination on the previous afternoon. The patient had been very upset by some remarks made by the physician who examined her. The nurse reported that the patient was still angry and upset by the incident when the tolerance was run. The fasting level was reported at 158 mg. per cent, urine glucose one plus. Following ⅓ Gm. of glucose per kilogram of body weight intravenously the levels were reported at one-half hour 244 mg. per cent, urine two plus; one hour 92, urine two plus; two hours 87, urine negative; three hours 98 mg., urine negative; four hours 76 mg., urine negative; five hours, 89, urine negative. The patient was sent home with no instructions and returned three weeks later. The intravenous glucose tolerance was repeated and the blood and urine levels were reported as follows: fasting 80 mg. per cent, urine one plus; one-half hour 93, urine two plus; one hour 76, urine heavy trace; two hours 90 mg., urine negative; three hours 85 mg., urine negative; four hours 75, urine negative; five hours 84 mg., urine negative.

The patient was placed upon diet and medication as recommended by Portis. Two weeks later the intravenous tolerance was reported as: fasting 85 mg. per cent, urine negative; one-half hour 121, urine one plus; one hour 110 mg. per cent, urine negative. The urine remained negative for the remainder of the test. The two-hour level was 86 mg. per cent, at three hours 81 mg. per cent, four hours 63 mg. per cent, five hours 69 mg. per cent.

The patient reported that she felt much better for two or three days after she went home. On the second visit she had talked more freely. After this brief period the fatigue and weakness recurred and she again became preoccupied with the circumstances that seemed to have no solution satisfactory to her. She couldn't have the man she wanted, and if she left her husband she couldn't take the little girl with her. She wept bitterly as she spoke of the hopelessness of the situation. She was obviously very sick, and intensive psychotherapy was not available to her. She was seen on two more occasions at intervals of two weeks, but was then financially unable to afford the long trips to the hospital.

Our knowledge of spontaneous hpyoglycemia and hyperinsulinism has presented some aspect in each instance for an obvious approach to the problem of etiology. In addition, the interdependence, and the evidence of its reciprocal nature, characteristic of the psychosomatic concept, is becoming clearer. There remain those cases in which there is no apparent factor or group of factors to have led to etiologic studies. These can be divided into two groups: (1) those in which unexplained spontaneous hypoglycemia occurs alone, and (2) those in which spontaneous hypoglycemia occurs coincidentally with some other disease process. Coincidence is a statistical term, and as such the phenomenon is open to diverse explanations. Keeping this in mind, it may be of interest to consider the problem presented by the second group from this standpoint.

In an excellent study of the relationship of spontaneous relative hypoglycemia to the cardiovascular system, Harrison and Finks[258] observed thirty-one such cases. Fourteen of them were thought to be cardiac neurosis. In seven of these, the symptoms were considered to be due to the hypoglycemia. The other seven were diagnosed as neurotic. In one of these, however, it was observed that both the emotional stress and the hypoglycemia were necessary to produce the symptoms.

In two cases of hypertensive encephalopathy spontaneous hypoglycemia was recognized as an integral part of the pathogenesis. The same was true in two cases of carotid sinus syndrome. In these latter instances, the sinus was hypersensitive only during a period three to four hours after meals. In seven cases of various arrhythmias, spontaneous hypoglycemia seemed to be one of several integrated factors in their etiology. Six cases of angina pectoris were given special attention to explain the effect of the hypoglycemia. The authors were impressed by its frequency in relation to anginal attacks occurring at rest, and interpret the effect of hypoglycemia, relative or absolute, as a diminution of food supply for the myocardium. This point of view has been attacked by Gilbert and Goldzieher.[257] On the basis of their experimental observations they interpret the cardiovascular effects of hypoglycemia as due to sympathetic stimulation.

In addition to these cardiovascular states, glucose tolerance studies have been made in peptic ulcer, bronchial asthma, and acute rheumatic fever,[250] and in chronic ulcerative colitis.[252] The published curves resemble those of other authors writing on spontaneous relative hypoglycemia. In four of twelve cases of peptic ulcer, pain of sufficient severity to require interruption of the test occurred in the fourth and fifth hours at blood sugar levels between 50 and 66 mg. per cent. The meaning of this was not investigated. Forty-three and four-tenths per cent of thirty-seven patients with chronic ulcerative colitis exhibited flat tolerance curves after being on a standard diet of 85 Gm. of protein, 85 Gm. of fat, and 200 Gm. of carbohydrate. The mean blood sugar values were, fasting 80, one hour 89, two hours 72, and three hours 70 mg. per cent. Further definition of the metabolic disturbance and its relationships in these particular groups of patients is necessary.

There have been some interesting observations on the occurrence of spontaneous hypoglycemia prior to the appearance of diabetes mellitus. Daniels[225] observed and treated a patient in whom the diabetes was preceded by "hyperinsulinism" for many months. The diabetes, after its appearance, was very unstable, showing wide fluctuations. He quotes Geyelin as having stated that he had observed several such instances. The patient of R. B. Gibson's referred to previously as having developed a remarkable tolerance for hypoglycemia is such a case. This patient had been studied in the Pathological Chemistry Laboratories at the University of Iowa through the course of a severe spontaneous hypoglycemia. It was so severe that someone had to wake him up at night to feed him in order to prevent severe hypoglycemic reactions. After several months this metabolic disturbance gradually waned and altered to one characterized by hyperglycemia and glycosuria, which ultimately became permanent. The diabetes in turn required diet and insulin to control it. There were variations in the severity of the diabetic state and the insulin requirement would shift from as high as 40 to 50 units, to a condition where diet alone would control the disturbance, and then back again. There was no evidence of any other endocrine disturbance, and the patient was active and well as long as the diabetes was under control.

In addition to these instances in which the preceding hypoglycemic phase has been observed, there are diabetics such as the patient P. C. whose history was detailed in the section on diabetes mellitus. These histories suggest rather strongly that an absolute or relative hypoglycemic phase preceded the appearance of the diabetes. This is a phenomenon which has not attracted the attention it deserves, especially with regard to the pathogenesis of certain cases of diabetes. The suggestion has been made that one of the factors in the genesis of diabetes is an exhaustion of the islet cell function. This has usually been related to a high carbohydrate intake as the factor which might lead to such an exhaustion. There is, however, a reasonable possibility that there are other factors than diet involved in the pathogenesis of the spontaneous hypoglycemia.

The diagnosis of spontaneous hypoglycemia is concerned especially with its etiology, since rational treatment depends upon this. Such an etiologic diagnosis cannot be based upon the results of laboratory procedures alone, as is evident from the previous discussion. Attempts are made to differentiate those patients in whom surgical extirpation of a pancreatic adenoma or resection of a large portion of the pancreas will give a more or less satisfactory result, from those who have no such basis for the metabolic disturbance. This differentiation has been based upon (1) the degree of hypoglycemia, (2) the occurrence of the attacks during fasting, and (3) the demonstration of absolute hypoglycemia during an attack. The most important of these is the second since the continuous secretion of sufficient insulin will consistently produce absolute hypoglycemia. Mistakes are frequently made, however, because there is not as sharp a line between the surgical group and the nonsurgical group as we would like to believe. Furthermore, in the absence of an adenoma, surgical resection of a large portion of the pancreas is not always effective in controlling the condition. The following scheme of diagnostic criteria is an attempt to correlate present knowledge on this point:

1. The history of attacks with typical symptoms one or more hours after meals. Adenomas are more frequently associated with attacks not related to meals in this way. They are likely to produce attacks in the fasting state.

2. Glucose tolerance curves may be normal, flat, or rise to abnormal levels and fall rapidly. Adenomas are more frequently associated with fasting levels of 50 mg. per cent or lower, rise less, and fall again to low levels in two hours and remain there. The toler-

ance should be preceded by three days of a high carbohydrate intake, 250 Gm. per day. The intravenous technique should be used as advised by Portis and Zitman to avoid errors from erratic absorption.

3. Special symptoms correlated with low blood sugar are usually reproduced by insulin so typically that the patient recognizes them. Harrison and Finks have contributed this observation with special reference to cardiovascular symptoms. They advise the intravenous injection of 10 units of insulin in the third or fourth hour after a low protein meal. A second dose of 15 units may be given an hour later if necessary. Glucose should be available to check the reaction if necessary. It may be continued the next day with larger doses.

4. Relief of symptoms is to be expected following glucose administration if they are due to the physiologic effects of glucose deprivation in the tissues. This will be consistently true in adenoma. Symptoms not related to hypoglycemia in this way will not be relieved on a physiologic basis, but may be relieved on a psychological one, especially if food is given by mouth. Food, sweet food particularly, may have a strong emotional satisfaction for the patient.

5. For surgical purposes the symptoms must be correlated with a blood sugar level of 50 mg. per cent or lower. This may or may not be true in nonsurgical cases.

6. The response to indicated treatment will give helpful information. An absence of satisfactory response to diet and other indicated medical measures is more likely to occur in surgical than in nonsurgical cases. This is the same as saying that if nonsurgical therapy is used as a therapeutic test, it will narrow the group in which a surgical approach must be contemplated. The important error to avoid is that which leads to unnecessary surgery.

7. It happens in these conditions as in others that surgical exploration is to be considered a diagnostic method, controlled by the foregoing considerations.

Cushing's Syndrome

The clinical aspects of the entity described by Cushing[269] in 1932 have generally been accepted as a specific syndrome related to endocrine dysfunction. The significant clinical features have been listed by Albright[219] to include: (1) mild to moderate obesity with a tendency for the fat to be deposited in the neck and face ("moon face") and to spare the extremities; (2) mild hirsutism without other evidence of virilism, usually but not always associated with a slight to moderate elevation of the urinary excretion of the 17-ketosteroids; (3) a thin, reddish skin, easy bruising, often large purplish striae, and a marked susceptibility to skin infection; (4) hypertension and arteriosclerosis, often accompanied by coronary heart disease and vascular disease of the kidneys; (5) impotence in men, and amenorrhea in women; (6) muscular weakness with a low creatinine excretion as an indication of decreased muscle mass; (7) diabetes, which is usually mild and insulin resistant, (8) osteoporosis, especially of the spine, associated with hypercalcinemia early in the disease, and (9) mild erythrocytosis without increased blood volume. The obese appearance of the patient's trunk is exaggerated by the relaxation of the abdominal wall through loss of muscle substance and tone, and the increasing kyphosis of the cervical and thoracic spine due to the osteoporosis.

The syndrome occurs more frequently in females than in males. It was only after Cushing's account that this syndrome was separated clinically from other masculinizing conditions, particularly the adrenogenital syndrome. The clinical separation may be difficult because certain cases give evidence of an overlapping or combination of them in varying degrees.[270]

As originally described by Teel[278] and Cushing,[269] the clinical phenomena were related to the presence of basophilic adenomata of the adenohypophysis, and ascribed to excessive hormonal secretion from these cells. Further studies have demonstrated that it is probably not so simple. Kepler[273] summarizes the unfinished status of this problem, and supports the hypothesis advanced by Albright[219] that the common endocrine denominator is hyperfunction of the adrenal cortex. Crooke's changes of hyalinization and vacuolization in the basophilic cells of the adenohypophysis are considered specific, but a degenerative effect rather than the cause of the hyperfunction of the adrenal cortex.

This concept is suggested also by Cutting[270]: "It may be postulated that, as in the case of other organs influenced by hypophyseal activity, an increase in the amount of some circulating hormone produced by the target organ may result in an inhibition of pituitary function." Friedgood[271] has summarized the extensive experimental evidence that the adenohypophysis secretes an adrenocorticotropic substance. Disease or removal of the adrenal glands has a reciprocal effect on the basophils, being associated with a decrease in their number. A marked depletion of their basophilic granulation occurs under the influence of administered adrenocorticotropic substance. "Thus, a homeostatic mechanism regulates the rate of secretion of the thyrotropic and adrenocorticotropic hormones and others which behave similarly. This mechanism responds sensitively to the concentration in the blood of the hormones secreted by the target gland which has been stimulated." What is the mechanism of this stimulation of the adrenal cortex, and what sets it in motion?

There is a question as to the effect of replacing the secretion of the adenohypophysis in contrast to the reciprocal effect of the secretion of the target gland. In both the human and animal material the effects of replacement with adrenocorticotropic substance or removal of the target gland are similar: a loss of specific secretory granulation or diminution in the number of specific cells, or both. Heinbecker[272] observed similar changes in the basophilic elements in dogs in which the hypothalamic nuclei had been destroyed. Presumably, these results reflect the removal of a specific stimulus. Neither of these phenomena correspond to the changes in the basophils observed by Crooke.

A further development in the theories of pathogenisis of Cushing's syndrome was the suggestion of Albright[219] that the "alarm reaction" studied by Selye[244] might be involved. Here again the relationship is purely hypothetical and is mentioned because of the interesting speculations regarding it. Since the mechanism of this reaction requires the presence of the pituitary and leads to hypertrophy of the adrenal cortex and atrophy of the lymphoid apparatus, it suggested to Albright a neat explanation for the pathogenesis of some of the clinical and biochemical phenomena.

The psychological aspect of Cushing's syndrome has been mentioned several times in the literature. The observed phenomena have been considered to be secondary to the change in body shape and appearance. Maclay and Stokes[274] report a case ultimately shown to be associated with hyperplasia of the adrenal cortex with Crooke's changes in the basophilic cells of the adenohypophysis. They felt that this case showed that the endocrine disorder may produce systemic disturbances which secondarily involve brain structure and disturb its function, and that the bodily changes produced may be of such great social significance that the personality showed signs of stress.

Their patient was a white girl, 25 years old at the time of onset of the symptoms of Cushing's syndrome. The father was 75 years old and the mother 64 years of age. Both parents were apparently in good health. The father had married twice, with one daughter by the first marriage, and two sons and four daughters by the second. The patient was the second of the daughters by the second marriage. The family life was described as happy and "normal," and there was no history of nervous, mental, or endocrine illness. The patient had been quite sociable in school. She liked games and was good at them. Since leaving school, she had held two jobs for four and nine years, respectively, working until one week before admission to the hospital. Her personality was described as "good." Her friends often called her placid and carefree. In her opinion, she was inclined to be shy and sensitive. She was never jealous and never worried about her health. She was perfectly well until August, 1933, when amenorrhea appeared, followed by obesity and overgrowth of facial hair. In the next two years the patient's personality changed remarkably. She became seclusive and morbidly sensitive about the facial hair. There was marked jealousy of her sisters and of any new clothes that her sisters bought. She gradually lost interest in everything and became depressed. She threatened suicide, but the one attempt made resulted only in superficial wounds on her wrists from a razor. She remarked several times that she would commit suicide except for the trouble it would cause others. Later she expressed ideas of self-reproach. She would ask if she was a "bad woman," really a thief, or had committed any crime. She had vague ideas that her amenorrhea might be connected with pregnancy. She had some definite delusions later, with ideas of reference when she heard people say "that woman" in a scornful way, and felt that her name was coupled with unpleasant things. She began to express morbid ideas about her body.

The frequency of such emotional reactions in Cushing's syndrome suggests that something more than the social significance of the body and facial appearance is involved in their genesis. Other gross body changes such as are seen in obesity, hirsutism, and acromegaly have such an effect only infrequently. The suggestion of Maclay and Stokes that the endocrine dysfunction plays a role in the development of the psychological reaction is important. In addition to these, however, it is very likely that the patient's interpretation of the bodily changes is an integral part of the psychological reaction of the individual patient. The development of a psychosis in the early phase of the syndrome would suggest further that other elements enter into it than the social significance of the patient's appearance. Schlezinger and Horwitz[275] report such an instance, and emphasize the frequency of mental symptoms, particularly depression, either psychotic or borderline in type.

"We wish to direct attention still further to this problem and to emphasize the possibility that there may be a more or less specific form of psychiatric disorder associated with Cushing's Syndrome. The mental depression observed in these cases may bear a close relationship to the depressive phase of manic-depressive psychosis and to involutional melancholia."

The patient was a 27-year-old married woman whose history included a family history of dementia praecox, paranoid type, in a paternal aunt. She was not a wanted child. Enuresis persisted to 6 years, at which time a tic of one shoulder and arm with rotation of the head developed. Somnambulism occurred between 8 and 11 years. She had been a vivacious and sociable child but preferred the company of adults. She had been considered the baby in the family. She had had influenza in a severe form in 1918. The menstrual history was normal. In late adolescence a marked antagonism developed toward the father. There was little grief at the time of his death. At the age of 19, for a year, she maintained a companionship with a man much older than herself against the opposition of her family.

She had been sensitive about the shape of her nose, and at 20 years of age had a plastic operation on it, following which she was very nervous. A similar attack of nervousness had occurred previously when she was panic stricken after swallowing a bone. She married, at 22 years of age, a man who she knew had heart disease and seemed to worry considerably over this. The marital life was described as happy, though she was said to have had little desire for sexual intercourse. No history recorded of pregnancies.

Following marriage she gained weight gradually, and three years later the change in body contour became noticeable. In August of that year, the change in behavior was first noted. At this time an episode occurred in which the patient became greatly excited and thought she was going blind when lights flickered during a thunderstorm. A month later a sudden marked change in behavior followed an incident when her husband fainted at the unveiling of the tombstone of his father. At the time she was shocked by the thought that he might be dead. She became incontinent, dazed, and resistive. She frequently expressed a desire to die, and threatened to stop everything, even her bowel habits. Amenorrhea appeared a month after her husband fainted. The patient's behavior progressively deteriorated. A change of gait appeared, consisting of slowness and small steps. When she was seen by the authors, some of the deterioration had cleared and she was a quiet, cooperative, well-behaved person. There was a marked psychomotor retardation, a marked poverty of thought and no spontaneous speech. Her plans for the future consisted of "Go home, be with Mother." Twelve hours following surgical removal of a left suprarenal neoplasm, she developed hyperpyrexia and tachycardia, and died the next day.

In a review of the outcome of this syndrome, Bland and Goldstein[268] mention the poor operative risk and infection as liabilities. Death, under these circumstances, frequently occurs as the result of hypoadrenocorticism. These authors state that, "Another complication not uncommon is a mental depression amounting to a serious psychosis. There were three suicidal deaths in the 58 verified cases with pituitary adenoma previously reported, and we have learned of others in recent cases."

Another aspect of the patient's illness is suggested by the occasional report of onset in relationship to an event which has an obvious emotional significance for the patient. The case of Schlezinger and Horwitz which has been quoted is suggestive in this respect, as is that reported by Cutting, Cox, and Laqueur.[270]

Their patient was a 44-year-old widow who was first seen in a state of agitation and excitement without any specific complaints. She had always been moderately fat, but was otherwise well prior to the death of her husband from tuberculosis early in 1939, when it became necessary to support herself and her four children. Shortly afterward, in July, immediately after a normal menstrual period, she noticed that she was "swollen all over." Her face became puffy and there was swelling of her arms and legs, so that she had difficulty getting into her clothes and shoes. The swelling did not recede at night and did not pit on pressure. After several days the swelling disappeared gradually without polyuria. She had no further menstrual periods and there was some sensation suggesting hot flashes. After a few weeks she became dull and very depressed and noticed that her hair was falling out. A demonstration of a low basal rate led to the treatment with thyroid substance, and she felt much better for a year and lost fifty pounds in weight. Then she became progressively more depressed and there was an obvious personality change. Diabetes developed. The mental state deteriorated further. She had many hallucinations and was very agitated, and made several attempts at suicide. Physical and laboratory examinations were compatible with the diagnosis of Cushing's disease. The x-rays of the sella turcica revealed an irregular decrease of bone density and enlargement of the sella. These changes appeared in the course of a year of observation. She died in coma soon after these changes were found. Autopsy findings revealed a very thick cortex on both adrenals, the combined weight of which was 30 grams. The pituitary was embedded in adenomatous tissue of chromophobe cells. Crooke's changes were observed in the slightly basophilic cells at the periphery of the adenomatous tissues and in practically all of the basophilic cells of the adenohypophysis.

The point of interest in this report is the type of onset, similar in many respects to the onset seen in hyperthyroidism following an emotionally traumatic episode, with death occurring eighteen months later. The role of the chromophobe adenoma is not clear. Its appearance concomitant with the occurrence of the endocrine disturbance relates it to these changes, but it is questionable to assume that it might have been causally related. Any type of endocrine alteration, histopathological or functional, gives rise to question: granting any theory of adenomatous or hyperplastic change, why should the developmental and functional change occur at this point? Likely, the endocrine balance was precarious at this time in a female near the menopausal age. The interrelation of psychological reactions with endocrine functions are becoming more and more widely recognized and must be kept in mind in relationship to this syndrome as well.

A more certainly instructive case was observed by the author.

A young, unmarried, Italian girl, M. F., 21 years of age, was first seen by us in 1945. The patient was a short, heavy-set girl with a small amount of dark coarse hair along the sides of the face. The rest of the face, especially across the upper lip, did not have more hair than is seen in dark-complexioned girls of Latin extraction. There was somewhat more than the usual amount of hair on the forearms and legs. She was very sensitive about her physical appearance. She was reticent and moderately depressed. There was very little spontaneous speech. She played continuously with a ring on the right third finger, a ring her brother had given her before he left in the service. At the same time he had given his fiancée an engagement ring. When she did not play with the ring or her hair, she tapped her right foot. This was a trait that her father had had and which she had started soon after his death.

She was the youngest child in a sibling group of one brother and three older sisters. She had always been spoken of and treated as the "baby" in the family. She had been slim, and described herself as happy and carefree, "not too sociable," but getting along well with other children of her age, prior to the onset of her illness six years before at the age of fifteen. The patient had been her father's favorite. He helped her with her school lessons and when they got beyond him, she would draw the pictures from the biology book and he would admire them. He would always come to meet her on her way home from school.

The father had had an intermittent cough for many years, but did not appear to be in ill health. One Saturday when the patient was 15 years old, she was preparing to go over to the home of a married sister. Her father kissed her goodbye and told her to tell the sister he would be over to see her in a few days. While the patient was at the sister's, there was a telephone call for her from the mother. The father had died. "I was stunned. I couldn't cry. I couldn't remember much of what happened. They kept telling me to cry. I couldn't, not even at the funeral. It was after the funeral when I cried and cried. I couldn't remember where my father was buried."

The patient had begun to menstruate two days prior to the father's death. The menstrual periods had been regular at twenty-eight to thirty-day intervals lasting five days. When she went to the bathroom sometime after receiving the news of her father's death, she found she had bled very little. There was no further bleeding then and no subsequent menstruation. In two weeks her clothes of which she had been so proud because of the way they fit, would no longer fit her around the waist. Two weeks later she first noticed the purplish striae over the inner surfaces of the upper arms, the lateral aspects of the abdomen, and the thighs.

She noticed during this time, as did her family, that she became more and more depressed and nervous, and cried easily. The patient remarked, "All I could think of was my father." She became more and more inactive, and did not like to go out as she had previously done. She finally left school because her grades were poor. One of the boys drew a picture of her with a big round face and body and spindle legs and arms. The children would tease her about being so fat, and say it was because she ate so much spaghetti. Spaghetti was her father's favorite dish, but since his death they had not had it as frequently as previously. The patient remarked that she couldn't go out because "I'd have to go through the door sideways." She spoke of her embarrassment as similar to the feeling she had when she saw a pregnant woman on the street, and thought how people would talk about it. She recalled walking along the palisades with her mother and father when she was a child. They saw some bathers far down at the river's edge. The mother and father told her that was where babies came from.

Her mother finally took her to a doctor because of the change in appearance and the nervousness. A year after the father's death, she was referred to the hospital where a diagnosis of Cushing's syndrome was made. X-ray studies revealed a normal sella turcica. Perirenal air injection did not reveal any abnormalities in the adrenal areas. Treatment by low caloric diet and x-ray to the pituitary was accompanied by a gradual decrease in weight from 140 pounds to 113 pounds. There was some improvement in the depression. The nervousness continued. As she began to feel better, she got a job in a baby carriage factory where her sister worked. Here she felt that the men were dirty in the remarks they made to the other girls. One older man she liked because he treated her like a daughter. A similar attachment development with the boss who was an elderly man. There was little reaction at his death two years later. Some of the employees asked her what she would do now, implying to her that she had received favors and consideration from him over themselves. The boss's son took over and a similar attachment developed there. She spoke of how kind he had been, sending her flowers and candy while she was in the hospital for restudy at a later date.

At present, she is still not very active or sociable. The majority of her contacts are with her family. In spite of the fact that her appearance has improved remarkably, when compared with full-length photographs taken when she was first seen, she is still sensitive about her physical appearance. She will not wear short-sleeved blouses because the striae on the upper arms will show. These have now lost the purplish prominent appearance and are only slightly lighter than the surrounding skin.

After the patient had been seen several times, she began to speak spontaneously about current things, her work, the ordinary comings and goings at home. She lived at home with her mother and two sisters, one married and one unmarried. The married one works where the patient works. A third sister is also married and has a baby and lives nearby. Her husband acts "more or less as the man in the family." Most of the patient's time at home was spent listening to the radio and thinking about her father. Her brother went away in the Navy and was injured. She was agitated about what might have happened to him, and built up some fantasies about his being burned. Then she listened to the radio and thought about her brother. When he returned home on leave, she couldn't get over how much he had changed. He coughed a lot at night, stayed out late with his girl friend, and drank a lot. The patient would stay awake at night until he came in.

Ever since her father's death, she had slept with her mother. She says she didn't want to because it was the same bed her father had slept in. The other sisters would not do so, and her mother made her do so. She speaks of their home as "my house" and wants to redecorate it, but feels she cannot until her married sister and children leave. The children play around and mar the furniture. She is afraid they will fall through a window or burn themselves on the heater. The noise they make upsets her considerably; so she leaves and goes over to another sister's home.

She is beginning to become interested again in her clothes. She has been buying some new clothes and saving them in a cedar chest. She speaks with irritation about her sisters borrowing her clothes. Recently she bought a new Easter outfit and wore it to show the doctor. At the time of her birthday, the workers gave her some sheer stockings and a handbag. She felt she had to do something in return and bought a box of candy for them. They passed it around and insisted that she eat some; so she ate two pieces. She was disturbed by this, saying, "I do the darndest things. I keep thinking how fat those nuts will make me." She wants to lose more weight to get back to the slim shape she had before the onset of her illness.

There has been a gradual improvement in this patient physically and emotionally. She is still very insecure. The role and efficacy of x-ray treatment of the pituitary is not clear, particularly in view of the uncertainty as to the endocrine pathology in this case. It is probable that spontaneous adjustments have occurred to account in part for the recovery. Albright[219] suggested the use of testosterone in Cushing's syndrome on the basis of his concept of the particular adrenal cortical hormone disturbance present, plus the nitrogen retention and drop in 17-ketosteroid excretion demonstrated in their cases under the influence of methyl testosterone, testosterone propionate and androstanediol. These findings have not been consistently confirmed in other cases.

Two other patients with the clinical and laboratory evidences compatible with the diagnosis of Cushing's syndrome have also been observed. In each of these there were degrees of depression and anxiety. In one, the anxiety was clearly related to the circumstances surrounding the onset of the illness. It was so intense that the patient could not be brought to discuss these circumstances in the few interviews available. She remarked, "I can't see what all that had to do with this." In the third instance, the onset had been gradual. The depression was evident in the retarded thinking and speech, and the patient recognized this by comparing it with her previous freer thinking and speaking. In none of the patients were there other indications of suicidal tendency.

One thing is certain. There occurs in many of these patients a remarkable disruption of the psychological integration. It is more prominent than in any other metabolic disturbance. In addition to this, the evidence suggests that further study of similar cases will reveal multiple interrelated factors determining the occurrence, onset, and pathogenesis of this syndrome.

Hyperthyroidism

The metabolic disturbance which is characterized significantly by hypermetabolism related to excessive stimulation of cellular physiology by the secretion of the thyroid gland is, for this reason, termed hyperthyroidism. The term "Graves' syndrome" is more specific and more inclusive, in that it signifies a specific type of individual with a predisposition to the development of a particular clinical picture. The pathological background of hyperthyroidism is similar to that seen in other endocrine disturbances, usually an adenomatous and/or diffuse hyperplastic change or occasionally little or no change in the affected gland. The removal of a single adenoma resulting in the continued disappearance of the symptoms of hypermetabolism[287] defines a disturbance analogous to an adenoma of the islets of Langerhans or the adrenal cortex. It tells nothing further of the etiology, nor does it necessarily provide a clear-cut separation which can be applied in all cases. There are different types of adenomata, the functional aspects of which have not been worked out.[281]

Warthin's studies[296] of the problem led him in 1927 to emphasize "The Constitutional Entity of Exophthalmic

Goiter and So-Called Toxic Adenoma." His use of the term "constitutional" referred primarily to the factor of heredity and its influence as a determinant of morphology and function. His clinical and pathological studies led him to conclude:

> "The development of the basedowian or Graves' symptoms insofar as the thyroid is concerned, is but the expression of abnormal reactions of this constitutional anomaly to the conditions of the life of the individual. Only those possessing this constitutional anomaly will ever develop the so-called hyperthyroid or thyrotoxic symptoms. The potentiality may, however, remain 'latent' or quiescent during the whole or a large part of the potential's life. The clinical and pathological stigmata of the potential Graves' disease constitution may, however, be easily recognized in this individual."

Furthermore,

> "There can be, of course, no cure for the constitutional anomaly on which the development of "hyper" or "toxic" symptoms depends. These abnormal reactions may, and usually do, remain below the clinical horizon until called forth . . . in what way or by what mechanism we do not fully understand. It is evident, however, that the thyroid gland is not the chief pathogenic factor in these various clinical syndromes usually referred to this organ; it is but an incidental complication or sequela, comparable to the participation in abnormal reactions of the other organs and systems dependent upon the constitutional anomaly."

This author described the Graves' constitution individual as of "a youthful build with a slender, delicate and soft skeleton, slender waist, an exaggerated lumbar lordosis, increased articular mobility, long slender fingers and toes with pointed terminal phalanges, abundant hair, and well-developed teeth and nails. The muscles are long and thin; there is underweight rather than overweight." These morphologic characteristics are particularly striking when observed in the male[282] as a female shoulder slope, mammary development, and trichosis, with hyperextensible, spatulate fingers with square palm, and eunuchoid proportion of trunk to extremities in both men and women. This morphology, however, is not a constant finding, nor is the hyperplasia of the lymphoid system.[281] The nodular lymphoid hyperplasia constantly seen in the thyroids of Graves' disease is not present in the thyroids of experimental animals in which the syndrome is produced by hypophyseal extracts.[285]

The important aspect of the matter is the emphasis placed upon the relationship between the individual and his disease. Warthin's concept is inherently rigid, conceiving as it does, the individual and the disease as mainly the products of his heredity. The role of heredity in the etiology of Graves' disease is generally recognized, but it has not been defined further. Without reference to the psychiatric literature, its influence has not yet been untangled from that of environmental factors in the development of the individual. For instance Rienhoff[295] writes that "The tendency to inherit this disturbance of the entire nervous system is marked and forms the background for the majority of cases of hyperthyroidism."

The present concept of "constitution"[284] is more complicated but at the same time more dynamic. It involves not only heredity but the larger role of environmental influences in the individual's development, often termed pseudo-heredity.* Even more important are the dynamic psychological mechanisms through which the environmental factors exert their influence on the development of the personality structure and its mode of reaction in subsequent contacts with the environment. In the genesis of Graves' disease the contacts usually mentioned are physical trauma, infections, and psychic trauma. The recognition of their importance has generally been limited to the immediate time of onset of the metabolic disturbance. There is much evidence, however, that their immediate significance is dependent upon experiences buried in the past development. These phenomena have aroused curiosity in some. Means[287] asks, "Why is psychic trauma occasionally followed by exophthalmic goiter in such dramatic sequence that one can hardly doubt a causal relation?"

His answer to his own question sums up the generally vague impression: "It is a case of stimulus and reaction, a very special and peculiar reaction, and we are forced to the conclusion that into it must enter the nature of the individual." He then pushes the question further[288]: "What causes the breakdown? Why do some persons suffer from it and others not? It has been thought that shocking experiences of stress and strains of living in one way or another pull the trigger and cause the explosion which is the disease. Certainly it is true that we can frequently get histories in which what may be called psychic traumata are rapidly followed by the development of the disease. . . . However, in many other cases no such history can be elicited and the onset is gradual and insidious instead of explosive. Furthermore, many persons, most in fact, sustaining such impacts do not develop Graves' disease. Instead, they may develop peptic ulcer, hypertension, ulcerative colitis, or a psychosis." This list of alternative psychosomatic illnesses should be extended to include every other condition discussed in this volume. The first question might be rephrased to ask, How will the individual handle the problems generated by his particular psychological interpretation of the impact of the environment?

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* See Dunbar: *Psychosomatic Diagnosis*, New York, 1943, Paul B. Hoeber, Inc.

Knowledge of alterations in endocrine function in Graves' disease has enlarged from the point at which the thyroid was considered the organ of primary functional change. The essential symptoms of hypermetabolism can be reproduced in man by administration of thyroxine. Friedgood[285] and others have succeeded in producing the clinical, biochemical, and histologic changes of Graves' disease in guinea pigs by treating them with alkaline extracts of the anterior lobe of the pituitary. The response was usually more marked and more prolonged in the female animals. The response to iodine was the same as that seen in human patients. These data in addition to studies of the thyrotropic hormone in human beings[288] present strong evidence that the pituitary-thyroid relationship is of primary importance in Graves' disease. Further evidence suggests that this relationship is reciprocal, that thyroxine suppresses the anterior lobe activity in secretion of the thyrotropic hormone. Moreover, increasing activity of the thyroid is associated with an increasing rate of inactivation of the thyrotropic substance. Studies on this hormone indicate that the blood level and urinary excretion are related to the rate of production by the pituitary and rate of inactivation in the rest of the tissues, especially the thyroid. Exophthalmos may or may not occur in the experimental animal, just as is the case in the human being.[285] The data indicate that the ophthalmotropic activity of the pituitary is not related to the thyrotropic activity which would explain the physiology of the dissociation frequently seen between hyperactivity of the thyroid and the occurrence of exophthalmos.

Shifting the perspective from that which views the disease, its symptoms, physiology, biochemistry, and statistical aspects, to that which views the individual in whom the disturbance occurs seems to be a drastic maneuver. In all the nonpsychiatric literature there is no reference to the studies being carried on by psychiatrically trained investigators. Some of the answers to the questions that are being asked are developing in these studies. Familiarity with the techniques by which these answers are being worked out is necessary for appreciation of the significance and interpretation of the data.

The work being done to define the development and reactions of the individuals in whom Graves' disease develops is divided into two types.[290] The first type includes those studies covering a large number of patients to determine the more superficial characteristics. They illustrate the fact that patients who develop Graves' disease are sensitive individuals who may react excessively to all forms of psychic trauma. The second type of study deals with more refined and deeper penetration into the psychic structure, motivation, and function. This work requires more time and is necessarily limited to a smaller number of patients. The earlier work in both groups has been reviewed by Dunbar.[3] There was little in it to suggest any degree of specificity for the emotional component. There is much in it to prove that emotional factors are a large factor in the etiology of the disturbance.

Lorand and Moschcowitz[286] feel that the psychological component is the main factor in the Graves' constitution and that the influence of environmental factors is paramount in its development. They express the idea that Graves' disease is not a disease in the usual sense "but rather a series of disorders arranged in a biological progression that have received different connotations in the past. The natural history extends over a long period. The earliest phase is that known as basedoid, autonomic imbalance, neurocirculatory asthenia, etc. The middle stage has been termed formes fruste, prebasedow, etc., while the final stage is that conventionally termed 'Graves' Disease,' with the characteristic quadrad of signs . . . tremor, tachycardia, enlarged thyroid gland, and exophthalmos."

Moschcowitz and Bernstein[291] discuss this hypothesis further, with special reference to the inclusion of neurocirculatory asthenia as a manifestation of the Graves' syndrome. The symptoms are so similar that differentiation is emphasized by physicians who believe that neurocirculatory asthenia is a separate entity. The symptoms are identical with those often observed in patients before the onset of Graves' disease, as well as those which not infrequently persist after subtotal thyroidectomy. The dividing line is not sharp enough to differentiate until one or the other develops hyperthyroidism. Iodine has no effect on either as long as excessive thyroid activity is not present. The authors call attention to the lack of reports of hyperthyroidism developing in patients with neurocirculatory asthenia and report eleven patients of their own. Each of these was followed through, or a history obtained of, a course entirely compatible with neurocirculatory asthenia. In each instance hyperthyroidism occurred, frequently after a pronounced emotional shock. Surgical treatment relieved the patients of the evidences of hyperthyroidism but in all instances but one, which was not followed, the preceding neurocirculatory asthenia persisted.

These authors describe a characteristic personality[290] as the common denominator connecting the two. There was no characteristic physical make-up. The patients are very sensitive to their environment, easily and deeply upset, and as a result are usually intolerant. Because of their sensitivity they are likely to be shy and introverted. They are unstable in their emotional response. The onset of hyperthyroidism is frequently ushered in by a psychic insult and in most instances the emotional ingredient in this insult is fear. The authors ascribe the difference in sex incidence to the greater frequency of this type of underlying emotional personality in women. The infrequency of Graves' disease in children and in races of "crude mental fiber" is laid to the lack of development of "adjustable reasoning and emotive power."

In childhood there was evidence that these people had not been successful in their adjustments within the family. At first they were likely to be too pampered, especially by the mother, and then too great a demand made upon them in the course of their further development. They were unable to adjust to the demands made upon them because of the earlier protective environment. In adulthood they could not face the conventional tribulations of life. In their adult environment they showed the same type of emotional reactions to the attachments and frustrations as they had in childhood. Sexual difficulties, degrees of maladjustment, frigidity, or fears of pregnancy and childbirth, combined with intense resentment and repressed aggression toward men were present in all the women. In male patients there was a degree of impotentia, difficulties in sexual adjustment, frequently preceded by a persistence of habitual masturbation with marked conflict up to the time of marriage, due partly to fear of infection and partly to difficulties in adjustments to the opposite sex. Coitus interruptus and the resultant resentment occurred, and resulted in a tendency to avoid intercourse or a strong drive toward infidelity, with fear and guilt.

The general impression that the sex incidence in the Graves' syndrome and in neurocirculatory asthenia are opposite is discussed and evidence presented to show that the predominance of males in the latter is apparent rather than real. The question of their relationship is interesting but a similarity in psychological reaction is not decisive. It is highly probable that some other factor or more likely a combination of factors, genetic and early developmental features, combine to determine that the pituitary-thyroid balance will be disturbed by the individual's inability to handle the emotional energy generated by the specific psychological meaning of the environmental stimulus.

Conrad[282] approached this problem of personality factors in these patients in both ways, studying a large group to determine the general reactions, and studying two patients intensively. She summarized the views of Moschcowitz, Warthin, and Deutsch. She stated that the latter postulated a constitutional degenerative "anlage." Deutsch's work with the technique of hypnosis illustrated that the metabolic rate and other physiologic events could be remarkably influenced by unconscious as well as conscious psychic events. This has bearing on the fact that the patient may be wholly unaware of the emotional conflict which is of importance in the development of his hyperthyroidism.

In regard to the study and examination of these patients, Conrad emphasizes the importance of the technique, without which only those phenomena of which the patient is aware will be available to the investigator. Techniques in this field are as important in their way as are other scientific methods. A lack of familiarity with psychiatric methods and the interpretation of the data necessarily limits the value to others of any such study. Conrad calls attention to a particular sign:

> "In addition to the signs of emotion familiar to every psychiatrist, recognition of a characteristic flushing has proved of great value. First noted in a very extreme form, this blushing extends up from the upper chest to the middle of the cheeks and occasionally to the forehead, the neck veins stand out and pulsations in the neck increase in violence, so that in extreme cases the thyroid appears to increase in size. . . . Watched for in mild form, such a blush has repeatedly established points on a line leading to the patient's major unconscious conflict, as will be later cited in case reports. Once noted, it is a signal for as much caution as is the appearance of pain in palpating an acute abdomen."

This warning rose from experience with the sign as an indicator of a potential severe psychic reaction, either pre- or postoperatively. Another observation which suggested the direction in which the patient's conflict lay was that of mental confusion when the interview touched the core of the patient's difficulty.

The study of these patients with hyperthyroidism usually revealed an emotional shock or conflict activated at the time of onset of the first typical symptoms of hyperthyroidism, often the same hour or night, in contrast to those patients with diabetes mellitus. Occasionally a false lead develops when the story of some shock or disturbance is told without emotional reaction. On closer examination it became apparent that this occurred after the onset of the disease. Further study revealed the significant conflict as evidenced by blushing or emotional reaction. These findings emphasize the importance of determining with great care the point of actual onset of the hyperthyroidism. The study consistently revealed in the female patients one of two reactions preceding the onset of the disease: (1) a fear of loss of shelter and affection, often apparently equivalent to deprivation of mother or mother approval, or (2) a fear of the danger of the mother-role, often represented by such as the burden of nursing dependents. In the males the chief conflict seemed to be over loss of mother care or its equivalent. Variations included a fear of losing the mother's approval, of hurting the mother, or of not doing right by the family and failing as the father had also failed. In both the males and females it appeared that there was a rather high specificity of the conflict etiologically related to the onset of the Graves' disease. Otherwise, the patients may be able to stand stress and strain without great difficulty.

Two female patients were studied and treated intensively during remission. These studies disclosed that both patients associated death with giving birth. In relation to the material from the analytic experience and the case material from the larger group, the author felt that the underlying relation between the group that feared loss of shelter and affection and the group that feared the danger of the mother-role was a failure to attain security of identification with the mother.

Mittelmann's study[290] is important, not only for itself, but also because he had the opportunity to check Conrad's findings in his own material, and has confirmed the points of technique that she observed. He also confirms her observations that the importance for the patient of an event is not inherent in the event itself but lies in the way in which the patient interprets the event to himself, whether he is aware of it or not. It is quite possible that the influence of physical trauma or infection acts in part in this way in setting off the hyperthyroidism. An additional point in technique through which the picture was frequently clarified was the interview with the family. The patient may object, raising a problem in his relationship with the physician that will have to be dealt with.

The patients Mittelmann studied were divided into four general groups on the basis of their psychological status prior to the onset of the hyperthyroidism. (1) Patients with a balanced personality. As he states, a balanced personality does not preclude a psychic trauma as a precipitating cause, nor the neurotic nature of the patient's reaction. (2) Patients with a neurotic character. (3) Patients with a psychoneurosis, usually hysterical, and (4) patients with a psychosis, preceding the hyperthyroidism. Mittelmann presents the arguments usually offered with reference to the role of psychic factors, "that every person has unconscious conflicts and is exposed to psychic traumata, and for that reason these findings really have not much significance in Graves' disease, more than in any other organic condition. A second argument advanced is that the patients who apparently develôp Graves' disease following a shock have gone through other trying experiences before, without developing it, some of them traumata enough to produce hysterical reactions."

The answers he presents as follows: "1. There is a very close time relationship between the trauma and the onset of the first symptoms, in which the trauma evidently precedes the onset of the symptoms. The interval between the trauma and the patient's awareness of the new symptom is hardly ever longer than a week or two, and is frequently very short. 2. During the interview a patient shows all the signs of the tremendous reaction which he has had to the previously mentioned trauma at the time of its occurrence (weeping, flushing, confusion, and so forth). 3. The sensitization to this trauma can be traced to infantile relationships, the discussion of which produces in the patient a reaction similar to the one mentioned above.

By sensitization is meant an increased responsiveness to specific stimuli and an inability to cope successfully with this response."

This is the point where the internist and the psychiatrist meet. The internist[288] states: "In hyperthyroidism the pituitary-thyroid axis is geared to a higher level than normal. Where the factor that causes this shift impinges is not clear. Perhaps it is in the form of a nervous influence routed through the hypothalamus to the anterior lobe."

The psychiatrist states[232]: "Why certain individuals choose a specific physiological solution for their conflicts is the unsolved field of the 'choice of neurosis' and Alexander assumes the answer probably lies in some unknown organic factors which, in cooperation with psychic factors, leads to the organ neurosis. The organ neurosis is then, primarily the abnormal use or innervation of an organ in an expression of a repressed tendency, thus disturbing its function. The disease is the end result of the abnormal function." In other words, we know a little more of how a person comes to develop Graves' disease, but as yet do not know why. Mittelmann[290] states that, "It is also possible that the infantile injury is so deeply buried that it is practically equivalent to an organic damage."

Nevertheless, there is practical importance contained in the extension of our knowledge of the pathogenesis of hyperthyroidism. It is recognized that, while surgical intervention provides a means of breaking into the vicious circle formed by the emotional hypersensitivity and hypermetabolism, it is not an etiologic form of treatment. Preston and Thompson[294] point out that one reason for recurrence of the disturbance after surgery is the failure of the operation to remove the cause of the disease. It has been previously mentioned that the nervous instability and sensitivity present prior to the development of the hyperthyroidism is not eliminated by the operation. Conrad[282] describes the role of the psychiatrist in the management of these patients as "first and last the understanding of the emotional life of the patients, both as individuals and as a group. On this basis one looks to assist in ward handling of these 'most susceptible' individuals, to shield their vulnerable spots during convalescence, to increase their immunity to the difficulties of life by insight whenever possible, and to shed what light is possible on contributing personality factors and prophylaxis."

Surgeons have been aware[283, 297] of the necessity for some form of psychotherapy postoperatively in the majority of cases to insure continued improvement and prevent a recurrence of the disturbance. The intimate details of what happens to the patient's illness following subtotal thyroidectomy have not been completely worked out. Apparently, the course of the disease is altered with respect to intensity of the physiologic and psychologic processes which were intensified by the metabolic accession. The natural history of hyperthyroidism is that of a process characterized by exacerbations and remissions, and a definite tendency to self-limitation. Does surgical or medical reduction of the metabolic activity have any effect on this course? Experience with newer methods of medical intervention[289] indicates that the activity of the thyroid must be controlled for at least six months in order to expect more or less permanent results in three-fourths of the cases.

Paschkis[293] reviewed this problem and concluded that, "It is not yet possible to foretell whether or not treatment with thiouracil or related drugs will eventually replace surgery for diffuse toxic goiter. Just as surgery, it is not etiological therapy. Just as surgery, it interferes with a deranged mechanism without being directed at the cause, the latter being unknown. Perhaps, at least in some cases, psychotherapy comes closest to the roots. But once the chain of pathological events is started, psychotherapy will not be able to revert it to normal." It is certainly true that in the majority of cases that are operated upon some form of rapid intervention cannot be dispensed with. There are, however, a large number of cases[3, 282, 290] in which some form of psychotherapy, in addition to other measures, has been consciously applied and the results interpreted as beneficial. So far the combination of thiouracil control of thyroid function *plus* definitive psychotherapy has not been utilized. The question to be tested is whether the combination rather than either one alone would shorten the duration of the illness and increase the frequency of durable good results.

The probability of its fruitfulness is suggested by the case reported by Astwood[279] with classical history and signs associated with Graves' disease. She showed no response to iodine given in preparation for surgery. She finally volunteered the information that her disease was caused by her husband's attachment to his mother. Whenever the patient had a disagreement with him, he would leave her and return home to his mother. Each time this happened the patient would have the symptoms of Graves' disease. A reconciliation with the husband was effected and the patient announced that now she would recover, and refused operation. Thiouracil was to be given, but through a misunderstanding the patient returned home without it. She recovered "completely" and the thyroid gland decreased in size in a striking manner. "Complete recovery" is questioned since a recurrence of the environmental difficulty led again to minor symptoms and signs of Graves' disease. Rather, her recovery was a "conditioned" one, dependent upon environmental manipulation. "The underlying psyche or constitution remains, again potential, given the proper environment, to bring forth a recurrence. A patient with Graves' disease is never completely cured in the sense that one cannot predict with any assurance that a recurrence will never take place. For this reason, as we have previously insisted, the treatment of the patient with Graves' disease only begins when the operation has been finished."[292] The problem deserves consideration whatever the measure used to control the activity of the thyroid. It is a doubtful medical philosophy that looks toward a freedom from having to treat the patient as well as the disturbed physiology.

An illustrative case is that of E. W., a 36-year-old white married male who came to the clinic complaining of loss of weight, low back pain, rapid heart, fatigue, weakness, and anorexia. These symptoms took him to a doctor in August of 1946. A detailed investigation of the development of these symptoms revealed that the patient was an only child in a family that lived in rural Colorado. His father had died when he was 5 years old. His mother had to work to support them until she remarried when the patient was 11 years of age. At this time he began walking in his sleep. He was unable to get along with his step-father who would not allow him to play as the other boys did. He was particularly resentful of the fact that whenever the mother took his side in an argument, the step-father would mistreat her, sometimes to the point of physical violence. "He was jealous of anything she did for me."

From this time on the patient's relationship with his mother and step-father was unsatisfactory. His schooling was erratic, although he persisted at it through the eleventh grade. At the age of 12 he developed rheumatic fever which ultimately led to a mitral valve lesion. However, it did not limit his activity to any extent. He recalls a specific date, June 16, when he finally had to leave home, feeling that he was forced to leave his mother. The issue was forced by his step-father on the basis that the boy was able to support himself and could not live at home. From then on he lived with an aunt and uncle in Ogden, Utah, working and going to school.

At the age of 24, in December of 1935, he married a girl 16 years of age. A son was born to them in August, 1936. They did not get along well. The girl said people couldn't get along unless they had more money. They separated in 1938 and were finally divorced in 1939. During the separation and for some time before the divorce became final he took care of the boy, or hired someone to do so for him. His former wife was engaged to be married again during that six-month period. Soon after this the patient was hit by a bus and had his leg broken. While he was in the hospital the divorced wife asked for his permission to remarry before the decree was final, and to have the child. He consented to both requests as he felt he could no longer care for the child. He was very resentful of the actions of the girl in relation to himself and the child. He says he gets very angry but is afraid to let it out for fear it might hurt somebody.

In 1940 he met and married his present wife. They worked in the same place. During the next two years his former wife kept calling him or his wife. "I don't know what she said to my wife, but she felt I still owed her something and that I had to do anything she asked." His wife told him to see a lawyer to determine what could be done. She felt that formal adoption of the child by its stepfather would help to break the connection the patient's former wife insisted on maintaining with his present life. The lawyer told her she was jealous, and she stated that the patient had to give up either the child or her. The patient consented to adoption by the boy's step-father.

In 1942 he was called into the Seabees, but was discharged three months later when the cardiac lesion was discovered. He went back to work, and in an attempt to make as much money as possible he worked as much as ninety hours a week for the next four years. He recalls how pleased he and his wife were when the monthly check would be larger than they expected. He began to get nervous, tired, and sleep poorly. He didn't seem to be able to obtain enough rest. His appetite began to fail in March of 1946. That spring he weighed 182 pounds.

The weakness, nervousness, fatigue, and tachycardia interfered with his work. He became very much afraid he would make a mistake in the work, which at that time was as a glazier and cabinet maker. Finally he was fired in January, 1947. He did not know why, but thinks it was due to his poor health. This was affirmed when he reapplied recently for a job in the same place. Dyspnea and edema appeared and his private physician placed him on digitalis. On examination at the University Hospital the patient presented all of the evidence of hyperthyroidism without exophthalmos, a diffuse enlargement of the thyroid, an old rheumatic valve lesion of the mitral valve, and moderate cardiac decompensation. The body weight was 125 pounds. The basal metabolic rate was plus 54 per cent. The patient was placed on a sedative, phenobarbital, vitamins, and a high caloric, high protein and carbohydrate diet. The basal rate remained high and the symptoms were not alleviated except that he felt he was not quite so nervous. Propyl-thiouracil was obtained by this time and the patient was started on 100 mg. daily. The basal rate diminished to plus 26 per cent in the ensuing three weeks. The patient began to feel better, but he did not gain weight. Then the basal rate began to rise again.

It became evident that the patient's relationship with his wife was seriously affected. She felt that she was the only support in the family, and resented it very much. She had been having migraine headaches for some years, and now began having them every day. She became quite irascible with the patient, and he did everything he could to please her. He kept the house clean, did the washing, insofar as he was able. She began to threaten him with divorce again. It recalled to him the time when she gave him the choice between his child and her.

One day he came to the hospital in an extreme state of nervous agitation with a severe tachycardia, the rate running from 130 to 140 beats per minute. His eyes for the first time appeared exophthalmic. His wife had called him from her place of work that morning and told him she had gone to see a lawyer about getting a divorce. He felt that much of his wife's reaction was toward his mother who had been visiting them and trying to help during his illness. His wife had repeatedly attacked her verbally and threatened to leave him and break up their home, forcing the sale of the house they had bought. After talking it over, he decided to go see a lawyer for advice. He did so and told his wife he had done it and that she could file papers any time. This had a remarkable effect on her attitude toward him. She stopped becoming so angry, stopped criticizing him and his mother, and instead began criticizing her own mother. He was able to criticize her, too.

From then on he began to feel much better, gain weight, and sleep well, and had a good appetite. His strength returned so that he was able to do the house work, mow the lawn, and walk several blocks without fatigue or swelling of the ankles. He described his condition as "feeling better than I have for years."

In spite of this improvement the basal metabolic rate continued on up to plus 44 to 46 per cent where it remained for a period of six weeks. The weight gain was not marked, from 125 to 130 pounds, but he had been unable to gain any at all before. He began to think of getting back to work, not only because he began to dislike the housework, but also because his unemployment compensation was about to terminate. He started looking for a job.

The propyl-thiouracil was increased to 150 mg. daily with no evident effect on the metabolic rate. A further increase to 200 mg. daily was followed in ten days by a drop of the basal metabolic rate to plus 26 per cent.

In this instance it is evident that with the aid of psychotherapy the patient was able to work out an immediate problem that appeared as a significant threat to him. The threat of losing a wife was a threat to the feeling of security; it was a chronic state, and came to a crisis at a particularly bad time for him. It developed upon the background of a previous real experience and a marked attachment to his mother which he had transferred to his wife. With the solution of this immediate problem the symptoms subsided, although the basal rate was little affected. The fall of the basal rate recurred only after an increase of the propyl-thiouracil and psychotherapeutic management of the problem.

The following case illustrates the type in which there is a recognizable emotional maladjustment prior to the onset of the hyperthyroidism. It emphasizes the question as to why a patient who has been reacting in a neurotic manner for so many years should react with the development of an organ neurosis. Was it that the previous psychological defenses were not adequate to handle a conflict with more specific nuances, which in the presence of a necessary but undefined factor in the constellation determined the outcome?

The patient, M. R., 21 years of age, was a moderately tall, slender, individual with prominent eyes, some swelling of the thyroid region, and quite nervous in her attitude. The skin was obviously oily and there was an acneform eruption over the face and chest as far as could be seen at the neck of her blouse. She had been studied in the hospital and a diagnosis of hyperthyroidism with exophthalmos made on the basis of the clinical picture and elevated basal metabolic rate. She was being treated medically with thiouracil. The patient was seen four times at irregular intervals although a regular schedule of appointments was arranged at her request after the first brief interview. She began the relation of her story by saying, "I have been nervous all my life, always high-strung. I've had queer little fears." She enumerated these as "fears of height, street cars, subways, my father, needles, and electricity." She spoke rapidly in an excited manner and with some degree of intensity. She remarked that she had been married November 14, three years before, and had had a baby the next October. Her second baby was born in August, 1944, somewhat premature. During this pregnancy she had gained from a usual weight of 135 pounds up to 190 pounds. At the termination of the pregnancy she was put on thyroid medication and discharged. She took the thyroid for three months and her weight decreased to 150 pounds. Two to two and a half months ago she woke up one morning and noticed an enlargement at the base of her neck.

She began talking of her family history. Her observations disclosed a remarkably ambivalent attitude toward her mother, father, husband, and a man who had assumed the character of a lover for her. "My mother is very wonderful. I am an only child. But my father drinks an awful lot. My mother has a mother complex. She feels that I can't take care of the children. My husband wants me to come to England. My mother weeps and objects because she doesn't want me to go away. She feels my first duty is to her. My father dislikes my husband. He is British and doesn't drink. My father upsets the children and me. He hollers and shouts. I've had that since I was five years old."

The patient met her husband while he was on a furlough from a training camp in Canada. He asked her to marry him after she had been with him four hours. They were married two months and ten days later, after she had seen him seven times. "He is a wonderful person. He wants me over there because he knows how things are for me here." "I don't think I would have married him if my mother hadn't objected so much. I insisted on marrying him. I think I might even divorce him. He's very nice to me but I'm one of those people who like to face things. He is like a little boy. He acts as though marriage is a game. I want things stable, old, belonging to me. I don't want to live from day to day. He wants modern furniture, and I want antiques to keep. They are substantial. I hate everything that may disappear tomorrow. My clothes last me a long time. They're always tailored and plain. I'm that way about my books, too. I think more of those books than anything. They are all kinds; they are my world. When my dad would get drunk I'd live in my books." While her husband has been away, she has been going out with another soldier, E., who had lost an eye. Her father brought him home, "To keep him from getting drunk. That's funny, the blind leading the blind."

"Even though I am friendly, I am suspicious on the inside. My husband resents that in me. He has had it better than I have had. He says that I am silly and stupid. Though I am fond of my husband, I really don't love him. I want some one who has known some insecurity so that they will know how I feel. When I married my husband, my father was drinking badly. My husband likes to go out on parties, but I feel so insecure in meeting strange people, so I don't like to go out with him." This emphasis on insecurity had its relation to E. who had had some difficulty over the loss of his eye. He had gained twenty-seven pounds since she had known him, and she felt she had helped him as well as he had helped her, "Because he is so quiet, calm, and steady with me." At this point she remarked, "I guess I'm supposed to be frank here," and after some hesitation when she blushed and became agitated, she added, "I think I'm in love with E. He's just the opposite of B., my husband." Contradicting the previous statement about divorce, she now said she couldn't divorce her husband and marry E. "because the Bible says it is adultery to get a divorce and marry someone else." In a later interview she remarked that she had received several letters from her husband in Germany, and felt bad because she hadn't told him she was ill. "I guess he is all right, it was all a bawling out. They were typically B. Like last summer, I was so sick before Bobby was born. He wrote then and bawled me out for not letting him know about how sick I was." "What am I going to do, this E. and B. question. I feel badly when I read his letters this past three months. I thought I might be in love with E. at that time, a little while before the thyroid swelling appeared." Soon after she had begun going out with E. he had called her attention to how "jittery" she was becoming.

When last seen the patient had obtained a job and was working and leaving the children for her mother to take care of. "Because I needed money, and it provides me with a routine and I like to live by a routine. It upsets me terribly if the routine is upset. I've always been like that. My mother says I have driven her mad. I don't want her to help me. She doesn't do things right and it annoys me. The job gets me away from home and I don't think about it." Then she remarked about a feeling of embarrassment when she came to the interview, as if all the people in the waiting room were looking at her. It gave her a feeling of not being clean and a fear of being dirty. She had had a dream the night before that she was about to be married, and was buying clothes. A boy whom she had known when she was fifteen (he was about 22 or 23 years old) was with her, going every place with her, buying stockings, handkerchiefs, and an aquamarine dress. She wanted the dress very much, but as she went into the store to get it she woke up. She did not return after this interview.

The traumatic effect of this patient's environment and relationships with both mother and father was obvious throughout the story, which was much more extended and detailed than given here. The relationship between the father and mother had been very poor. The father drank heavily and repeatedly, and had left the mother when the patient was a year and a half old. She had him arrested and "She took him back because she felt I should have a home." He had attacked the patient twice, trying to choke her, the last time a month after her last baby was born at which time she had threatened to call the police. The mother had told her the details of the early family trouble. "Mother says up to now my father was the chief cause of my trouble. Now she says it is my husband."

It was apparent that this patient's hyperthyroidism developed in relation to the conflict in which she was involved over her relationship to her husband and E., which in turn was part of the poor adjustment in her relationships with her father and mother. The environmental factor played a major role in her very poor development. Fantasy had afforded an easy and frequent escape. It is not difficult to see the incident of the metabolic disturbance as an integral part of this particular patient's natural life history. The question remains of why hyperthyroidism instead of some other means of expressing the emotional energy generated by the conflict.

The second case illustrates some of the other problems that occur in the understanding and management of the patient with hyperthyroidism.

M. R. was a 36-year-old married woman. She had not been feeling well for the previous three years, feeling "tired and run down." A physician had told her she had low blood pressure, anemia, and nervousness. The nervousness had increased since her marriage. After treatment for the anemia she felt stronger, but continued to feel tired, especially in the morning, so that she "just couldn't get around." She had a tonsillectomy in March, 1945, and then began to lose weight. This was the time of onset of the hyperthyroidism, as closely as could be determined. Since then she had cried easily and the nervousness had increased. She was unable to go out much because people made her nervous. A sister who was twenty years older than the patient had had a goiter operated on twenty-five years ago. The patient was 11 years old at that time and had had some symptoms which had led to a diagnosis of tuberculosis. These disappeared and she remained in fairly good health. She is the youngest of four children. The father died when she was 8 years old, of heart trouble. The mother is seventy-seven. "She's grand, always doing things for someone." The patient had wanted to be a nurse, "but in those days nursing wasn't like it is now and my mother wouldn't hear of it so that's all there was to that." Instead she became a telephone operator when the exchange was in their own home in rural New York. She stopped this in 1934 when she went on a visit to some friends in California. She remained there for two years and came home because her mother was not well, "My place was at home with her." She was married in 1939. Her husband is 34 years old and works as a salesman of bank supplies.

She smokes two packages of cigarettes a day and has done so "for a long time." She drinks to be sociable, and protests excessively about it. Her mother does not approve. She dreams "all of the time. They are so real I can't tell whether I dreamed something or whether it really happened." Her feelings have always been easily hurt, especially by remarks concerning her physical characteristics. She is tall and thin, and her manner is reserved. "Mamma often said I was a good girl. I don't show my feelings much. I'll thank people but I can't put on a big scene."

The patient appeared rather reserved with little evidence of emotion until asked about her menstrual history. She replied that she began at eleven years of age. "Began on the day of my aunt's funeral; that's how I remember it," and her face and neck flushed deeply. There had been no preparation for the onset of menstruation. During this interview she sat leaning forward from the edge of the chair, with her face held in her hands, flushing frequently. When asked about the blushing she said she had always blushed easily. The thing that was bothering her, she said, was the fact that the interview was investigating the details of her life. She said she had never been an intimate person except with her mother; that she didn't like people questioning her about things that were none of their business, but that she understood the purpose of the interviews was "to find out what might have caused the illness." She kept looking out of the door.

She was asked how she liked the hospital, the doctors and the nurses. She remarked, "I suppose you have heard of the mix-up that occurred soon after I got here." She had been placed in a four-bed ward. Her mother-in-law came to visit her and had pulled or pushed the curtain aside that separated her from the next patient. The patient in the next bed didn't like it, and said something about it later. "Another patient said that I wasn't very friendly and was too reserved. Rather than get into an argument, I took all the blame." She had then started to cry and was unable to control it, so that when the staff man made rounds, "He listened to the others but wouldn't give me a chance to say anything. He told me to shut up, and that if I caused any more trouble I'd have to leave the hospital." Then she "was hurt" by the resident.

She had been told by the interne that she could get out of bed if she didn't tire herself. She went to the phone and the assistant resident "scolded" her for getting out of bed. She felt "hurt and upset" because she felt it was not justified. That night she had a dream. "My sister had no canaries, only three babies left. A doctor came in. I was sent downstairs to get some stewed tomatoes for dinner. He was staying to dinner. It took me so long he said I did it on purpose and I cried." The sister was the oldest one who had had a goiter operation. She had two children, was sick, very stout, and had swelling of her legs so that she couldn't walk. The patient had some canaries in her house. The doctor was the doctor who had taken out her tonsils. Her throat was dry. "I've been clearing my throat a lot; it is dry. Began after my tonsils were out." Being made to feel hurt and accused, and crying reminded her of the episode that had occurred the previous day. She blushed repeatedly, especially on some reference to her being "hurt by the doctors" and when asked about "only three babies left" in the dream, she refused to say anything. There was apparently some fear of the interviewer.

It was obvious that the patient's emotional difficulty had something to do with the meaning of "pregnancy" and "being hurt," and in some way was connected with the tonsillectomy, following which the first objective evidence of hypermetabolism appeared. It is instructive to see how environmental factors, in this instance the contacts with the physicians, are interpreted by the patient in such a way as to activate the underlying emotional conflict. This is apparently part of the mechanism through which the tonsillectomy was effective.

The third case, G. G., a married man 44 years of age, is an instance of hyperthyroidism in an acromegalic. The acromegaly had existed for four or five years and the increased growth activity appeared to have subsided before the symptoms of hyperthyroidism occurred. The usual sequence is for hyperthyroidism to occur in the early phases of the growth disturbance, though it may exhibit exacerbations and remissions. The metabolic aspect in this patient's difficulty was being followed in the metabolic clinic, where he was being treated with thiouracil. The medication had been stopped approximately one month prior to the episode reported here. The basal metabolic rate had started to rise, and was up to between plus 30 and 40 per cent.

The patient had had a competitive passive relationship with his sister, with respect to the mother. He thoroughly resented any aggressive action on her part which took the form of placing him in the position of being to blame for something that happened to her. The manifest fear was related to whether the mother would take the sister's side or his in the argument. The episode in question occurred when his sister attempted to get him to confirm a course of action she contemplated. He avoided doing so. When it turned out to be an ill-advised course, she came home and there followed a period of several days of recriminations for his having recommended it. The patient became more and more depressed and fatigued. In the course of a week he was unable to work, and was finally brought to the hospital. His basal metabolic rate on admission was over plus 60 per cent. Within seventy-two hours it had progressively declined, without medication, to plus 30 per cent.

Sudden accession and subsidence of the basal energy metabolism of the individual such as occurred in the foregoing case, in the experiments under hypnosis as reported by Deutsch, and the fulminating onset of Graves' disease, should be considered in the light of what is known concerning autonomic-endocrine functions. Boothby and Baldes[280] utilized the rate of change of basal oxygen consumption to measure the rate of activation and decay of thyroxin administered to the completely myxedematous subject. Activation was relatively rapid. The increase of oxygen consumption reached a peak, on the average, in four days. The rate of decay was much slower, the oxygen consumption returning to the original level only after an interval of four to six weeks. On such a basis it is evident that sudden increase or decrease of energy metabolism is probably not due to changes in thyroid activity. On the other hand, this process is much more rapid under the influence of epinephrine, and the sudden influence of emotion on energy metabolism is much more likely to act in this way. It would be of interest to know the quantitative relationship between epinephrine and stimulation of energy metabolism in the Graves' syndrome, and its meaning in the psychosomatic relationship.

The patient-physician relationship with the hyperthyroid patient is influenced by several factors. It differs in this respect from the relationship in other instances in a quantitative rather than qualitative manner. (1) Fear plays such a prominent role in the lives of many of these patients. (2) It produces a more marked subjective, as well as objective, response, probably for two reasons: The patient's emotional reaction is more intense. With the stimulation of the sympathetic-adrenal functions and his increased susceptibility to the physiologic effects of epinephrine, the emotional reaction and subjective sensations are further intensified, making him doubly uncomfortable. (3) There seems to be a greater tendency to psychotic episodes. That is, the psychological integration or ego strength is unstable and weak. These facts should be understood by the physician in order that he can control the relationship with the patient and provide a stabilizing influence. The cooperative activities of internist and psychiatrist are necessary here as in other instances throughout the field of medicine. Weiss and English[247] emphasize the listening role of the physician. Their discussion affords an excellent account of the general psychotherapeutic activity of the physician in his contacts with the patient.

As indicated in the third case described, history-taking by direct questioning can be a severely disturbing process for the patient. Watching the reaction of the patient will tell the physician as much as or more than the words the patient speaks. On the other hand, the erratic behavior of the second patient, while consistent with the general ambivalence, seemed to be accentuated by allowing her too free a rein in the discussion of her troubles. Under these circumstances the contacts with the patient may be just as disturbing. The manic tendency in this patient was evident in the pressure under which the story spilled forth. With the appearance of guilt feelings which were not sufficiently dispelled, she stopped coming. This patient required more intense psychiatric treatment from the first, because of the severe underlying neurosis.

This brings up the question of psychosis as a manifestation of hyperthyroidism. The pertinent observations were reviewed by Dunbar.[3] It has been observed that the emotional instability that may be present preceding the appearance of the hyperthyroidism is intensified by the onset of the latter. Medical interference which reduces or eliminates the hypermetabolism with the attendant aggravation of the psychological diffiiculties will reverse this process. Surgical interference, however, carries with it an additional traumatic connotation. Surgeons have been well aware of the fact that surgery could act as a precipitating factor of marked increase of all of the symptoms. Postoperative psychotic reactions have been greatly reduced in frequency by preliminary medical care with iodine and/or thiouracil, plus sedation and attention to the increased nutritional requirements. The majority of these reactions were "toxic psychoses" related to the excessive metabolic disturbance activated by the surgery, the thyroid storm. This risk of surgery remains in a small number who tend to a psychotic reaction under ordinary life conditions, and should be assessed by psychiatric study when the question of surgical or medical control of the hypermetabolism is under consideration.

Obesity

The metabolic disturbance which leads to the development of abnormal increase in body weight, due to the general accumulation of excess adipose tissue, is termed obesity. The problems of etiology in pathogenesis are entirely analogous to those encountered in the study of diabetes mellitus. What role does heredity play, the endocrine system, environmental factors, and the structure and dynamics of the psyche in its reactions to the environment, including both the internal and external aspects of the latter? The premises which are generally accepted by students of the problem are:

1. Maintenance of the body weight depends upon the equilibrium between caloric intake and energy expenditure.
2. Increase of body weight depends upon increase of caloric intake relative to the energy expenditure, and vice versa.
3. Body build is hereditary, involving particularly the correlated functions of the endocrine system.
4. Distribution of body fat and local deviations depend upon genetic factors.
5. The level at which the caloric equilibrium is maintained depends upon several factors, hereditary, endocrine and psychological.

Rony[315] and Bauer[300] discuss at some length the role of heredity in the etiology of obesity. Rony, emphasizing the genetic background, concludes also "that various glandular disorders are frequent in obesity," and speaks of the combination as a "heredodegenerative constitution." In 69 per cent of his 250 cases, one or both parents were obese; both parents were obese in 24 per cent. "Such high coincidence of a characteristic in parents and offspring is in itself suggestive of the hereditary origin of the character, provided that joint exposure to environmental influence capable of producing the characteristic can be excluded."

Studies such as those of von Verchuer on identical twins living in similar and dissimilar environments revealed that of all the body measurements, weight showed the greatest variation, the average difference being 1.39 per cent and 3.6 per cent respectively. Newman's studies on identical and fraternal twins and nontwin siblings revealed that only 2 per cent of identical twins differed more than 12 pounds in weight, against 51.5 per cent of fraternal twins and 53.5 per cent of nontwin siblings. In nineteen pairs of identical twins separated from early childhood there were five pairs with marked differences in body weight. In each case the difference was explained by some obvious factor. Furthermore, a compilation of data on obese twins revealed a similar degree of concurrence in body weights. On these bases, Rony considers that genetic influences predominate over environmental factors in the control of body weight. Bauer[300] agrees with these conclusions. In both instances, environmental influences are considered as something apart from the patient. In both instances environmental influences are spoken of as *average* or *extreme* (tuberculosis, special feeding, multiple pregnancies). These connotations arise from the experiential interpretation of the investigator. An environmental influence does not exist without relationship to the patient, and the influence peculiar for that patient depends upon the particular meaning of the circumstance for that individual.

There is no doubt that heredity is involved in the control of body weight, just as it is involved in all potentialities of the organism. The question arises as to how; and the logical extension of this is, how is it related to the development of obesity? What are the interrelations with the other factors involved? Rony[315] brings up the possibility of the genetic determination of endocrine function. In interpreting the coincidence of endocrine disorders in obesity, he suggests that: (1) The coexistence may be accidental, but the frequency suggests a close relationship. (2) Glandular disturbance may be a sequel to obesity. This relationship is suggested by improvement in menstrual disturbances and in glucose tolerance, respectively, in case of successful dietary treatment of obesity in such instances. (3) Coincidental structural involvement of the hypophysis in hypothalamic destruction. Brobek's review (vide infra) of this problem indicates that in experimental hypothalamic obesity in animals, the presence or absence of the hypophysis is not necessary. (4) Coincidence may be due to hereditary linkage of genes transmitting obesity with genes transmitting a glandular disturbance. (5) The glandular disturbance may be a causal factor of obesity by virtue of hormonal effects upon certain of the metabolic processes.

The occurrence of multiple conditions in the same individual always brings up the question of their relationship to one another. Frequently a cause-effect relation is implied. This particular problem requires study. The occurrence of obesity in relationship to hypothyroidism (an inconstant relationship), adrenal cortical disturbances (a multi-hormonal disturbance with definite repercussions on the personality reaction), and gonadal disturbances (especially eunuchoidism) has led to extensive investigation of the role of the endocrines in its pathogenesis. While there is an apparent cause and effect relationship when the problem is stated in this way, the inconstancy of obesity within each of these groups is another phenomenon to be considered. There has been a question as to whether this same relationship is significant in a large group of obese patients with no demonstrable functional pathology of the endocrine system. Rony remarks that, "accustomed as we are to divergent theories in the pathogenesis of other diseases, the confusion in the endocrinology of obesity is almost without parallel." While there are frequent evidences of metabolic disturbances, e.g., low glucose tolerance, high glucose tolerance, hypometabolism, hypermetabolism, hypomenorrhea, hypermenorrhea, menstrual delay, amenorrhea, stunted growth, excessive growth, the plethora of inconstancy in relationship to the constant feature, obesity, suggest variables that are more closely related to the individual patient than to the occurrence of overweight. This is further emphasized by the very similar findings in underweight or lean individuals,[315] Newburgh[240] has reached the similar conclusion, that whatever other disturbances are present, obesity is not related so much to endocrine factors as to relatively excessive caloric intake.

Evans[304] remarks that "most young people, and some older ones, enjoy an automatic mechanism for the balancing of intake to needs." What is the mechanism that controls this intake-expenditure balance? What are the factors that influence it? Brobek[301] reviews the role of the hypothalamus in the control of food ingestion in animals.

> "Experimental study has shown that the obesity of animals with hypothalamic lesions arises primarily from a marked increase in food consumption. This increase may be accompanied by a decrease in locomotor activity and by transitory depression of basal heat production, neither of which played any constant, essential role in the genesis of obesity under ordinary laboratory conditions." The presence or absence of the hypophysis is not significant in this picture. "That lesions of the hypothalamus induce these highly typical deficits seems to indicate that the hypothalamus normally participates in the maintenance of the over-all energy equilibrium, and that the control of food intake, work output, and body temperature may be correlated and integrated within this portion of the diencephalon."

Certain observations in human beings with tumors or traumatic injuries in this general region have not been so easy to interpret, since the injury under these circumstances is not as well localized as that produced in animals with the Horsley-Clark apparatus.

Some consideration has been given to the sensations of "hunger," "appetite," and "satiety," their origins, differences, and relationship to the problem of obesity.[315] It is evident that the sensation of hunger is generally related to the specific alteration of the tone and activity of the stomach. These changes are not completely checked by elimination of the nerve supply. Certain influences, such as interest or concentration may eliminate the sensation from awareness. The sensation disappears with fasting, although the contraction and increased tonus persist. Hunger appears to be concerned with the satisfaction of a quantitative biological need of the organism, and the sensation is not related only to gastric activity. It persists after gastrectomy. Evidence to be presented later indicates that emotional determinants play a large role in this sensation. Appetite is a more qualitative sensation, related to likes and dislikes; it is more clearly an acquired phenomenon and there is no obligatory relationship to hunger. The factor of satiety is not well defined. A stomach may be full, even distended, or empty without relation to the sensation. Lewis and Sarbin[308] observed that a subject under hypnosis when given appropriate suggestion would evince the reactions of hunger, appetite, and satiety, although no food had been offered or eaten. The effects of this procedure upon gastric contractions varied with the depth of hypnosis. There was no effect in the unhypnotized state, and a progressively more marked inhibition of gastric contractions following sham feeding as the depth of the hypnotic state increased.

Thus, these phenomena, hunger, appetite, and satiety, have one basic characteristic in common. They are closely related to emotional influences and susceptible to variations, increase, decrease, and/or perversion, on this basis. Eating habits and food selections are activities that develop in response to the environment, such as family eating habits and the emotional relationship with the members of the family, especially the mother and father. Selling[316] discusses the psychologic origin of dietary difficulties.

> "The relationship of adult eating and childhood eating, of course, is important from two angles; that is, the child with poor eating habits or abnormal tendencies which manifest themselves in the way that the child eats, is a problem. The eating habits of the parents reflect themselves upon the child, particularly upon the child who identifies himself closely with the parents."

Among other factors, this author notes[317] that pleasure-seeking is a large element in eating, and any dietary scheme drawn up without regard for this fact is likely to be unsatisfactory. Food may also represent security; a sense of insecurity may be expressed by gorging whenever the opportunity presents itself, or whenever the sense of insecurity is accentuated. Food may also represent power, and may be used as such. The term "hunger" has been defined too narrowly by restricting its significance to the need for food, when food can mean not only nutrition but also may satisfy the need for security, affection, power, as well as other emotional needs. In a larger sense, it represents the psycho-biological needs of the organism, only one of which is food. The frontispiece to Ribble's *The Rights of Infants*[312] consists of a picture of a tousle-headed, wide-eyed child of about three years seated at a table with a cup and dish. The caption reads "Food is not enough." There is the need in the child for mothering. Mothering .consists not alone of food and clothing. "It is really a continuance of the closeness of the pre-natal state, and the more clearly it imitates certain of the conditions before birth, the more successful it is in the first weeks. The newborn baby still needs to be carried about at regular intervals until he can move and coordinate his own body. It helps to strengthen his sense of equilibrium and to give him a feeling of security. Also he must have frequent periods of actual contact with the mother because the warmth and the holding gives him reassurance. . . . In addition, mothering includes the whole gamut of small acts by means of which an emotionally healthy mother consistently shows her love for her child, thus instinctively stimulating the psychic development. Obviously, feeding, bathing, and all of the small evidences of tender feeling . . . fondling, caressing, rocking, and singing or speaking to the baby. These activities have a deep significance."

"It is difficult to draw a clear line between the infant's physical and psychological needs, for the very act of making him more comfortable physically, if done by a kindly hand, may at the same time stimulate his sense of aliveness and his consciousness of personal contacts. Certainly we know now the capacity for mature emotional relationships in adult life is a direct outgrowth of the parental care, more specifically the mothering, which an infant receives. It is the first relationship of life which activates the feelings of the baby and primes his dormant nervous system into full functional activity, giving to each individual personality its original slant. Social impulses are part of our primary equipment; emotional hunger is an urge as definite and compelling as the need for food."

Alexander[298] states, "During early infancy the wish for love, the striving for security, the feeling of insecurity, possessiveness, greed, jealousy, and envy become deeply linked with the hunger drive and the process of nutrition." Anna Freud and Dorothy Burlingham[305] studied a group of children placed in institutions for various reasons. In the one- to two-year age group, they considered four aspects of the child's development, including feeding. The repetition of the pleasant experience of eating led to an equating of receiving food and the mother relationship. The love of food is inextricably identified with love for the mother. These experiences leave their imprint on the reaction to food throughout life. These authors observed that certain children eat too much for emotional reasons. They try to substitute the satisfaction of one instinctual urge . . . hunger . . . for the satisfaction of another . . . love.

Is it possible for emotional reactions to environmental relationships in infancy and childhood to influence the desire (hunger) for and the intake of food, so as to lead to overeating and obesity. A series of studies on obese children by Bruch[302, 303] discloses no significant evidence of disturbance in growth or sexual maturation. She found that overeating occurred only in the weight-gaining period (dynamic phase—Rony[315]). In the stationary period the intake of food was not sufficiently excessive to be determined by questioning or estimates. In these children there was a lack of maturation and inability to make social contacts as outstanding features in their development. For such children deprived of normal outlets in satisfying human contacts, the activity and pleasure of eating gained inordinate importance, and this could be traced to experiences in early life. In the children upsetting experiences frequently signalled the onset of obesity. Operations were the most clear-cut type of this experience, but others such as the focusing of attention on the "possibility" of sexual underdevelopment, or the death of a relative, were obviously important. Following these experiences the increased desire for food became manifested. This increased desire for food was also used as a sublimation of aggression. The common denominators of these situations were increased dissatisfaction, fear, or aggressiveness, which the children tried to appease by increased intake of food.

The mothers' attitudes toward food played an important role, and were usually due to deprivation in their own childhood, cultural, or religious influences. In a sense, they were making up to themselves for these deprivations by encouraging the child to eat more than necessary. Seventy-two per cent of these children were classified as inactive regarding energy expenditure in the ordinary activities of childhood. Seventy-seven per cent exhibited a definite delay in ability and willingness to take care of themselves. In the majority (65 per cent), the parents, usually the mother, expressed marked concern and fears about the safety of their children if they were away from their supervision. The study emphasized the role of the parents in suppressing the desire of the child to become independent in their activities. The children usually had few suitable playmates in their age group, playing with younger children or by themselves. Their amusements were largely sedentary, frequently coupled with eating.

The appearance of these children may give rise to shame and limit their social activity and development. "The shy, unaggressive and withdrawn behavior, the oversensitivity to possible insult and injury, the lack of self-reliance and self-confidence might be explained as response to repeated rebuffs . . . ." There is no doubt that these may be secondarily emphasized, but "close personal contact with many of these children and study of their life history and family background have shown that their difficulties of adjustment go back to a time long before they were conspicuous or handicapped by their ungainly bulk. These observations suggest that psychological factors play a determining role in the development of obesity in childhood." The psychiatric investigation brought out the importance of the emotional meaning of events for the children. This meaning was repeatedly that of a threat and danger to the physical integrity. "Since most undergo these experiences without undue disturbances, particularly without getting fat, one may assume that obese children possess a certain readiness to respond in this way to anxiety provoking situations . . . and that his previous experience had endowed eating and social activities with special emotional significance. As it is, food intake had an alleviating effect on his anxiety. whereas activity increased it."

An investigation of the home environment[302] of these children revealed that a disproportionate amount of money was spent for food. The personal characteristics of these parents were not such as to allow a harmonious marital relationship. The mothers were, with few exceptions, domineering in the family, and their attitude toward the obese child was markedly ambivalent, with a fundamental rejection compensated for by overprotection and excessive feeding. Greater security was found by the child in the relationship with the father, but the fathers were too weak to give positive guidance. Parental relationship to the other children in the family varied, sometimes quite markedly. Overconcern and fear of sexual maldevelopment were observed with reference to the obese child. The home environment did not offer adequate emotional security. "In these surroundings food had an exaggerated importance. It had been charged with a high emotional value and stood for love, security, and satisfaction and represented in all instances an important tie in the relationship between parents and children." [302] This poor development in the early stages of the child's life presented a continuous block to the further maturation of his social and sexual activities, and contributed in this way to withdrawal or avoidance of activity and a diminished energy expenditure. "The fact that patients develop different disturbances in apparently similar surroundings emphasizes the importance of the individual's responsiveness for the symptom formation.

Whether one calls the inherent individual qualities 'constitution,' 'heredity,' or 'anlage,' they in themselves cannot explain the disorder, any more than a certain environment alone can create it. Corresponding changes in both appear to be essential for the development of disease processes." [302]

The relationship of these phenomena to the adult case is described by Alexander.[299] When the adult ego, because of inability to find the gratification in normal life relationships, rejects the strong desire to love and depend upon others, there is a reversion to earlier types of behavior. In these cases the desire to love and be dependent is expressed in terms of "being fed," and a strong wish to receive food develops. Evidence for the role of psychological factors in the pathogenesis of obesity in the adult is appearing. It would not be surprising that it follows the same pattern as in the child, though in a more disguised form. Gill[306] studied thirty obese and thirty nonobese women by means of the Terman-Miles Attitude Interest Test. Her conclusions were as follows:

1. Newburgh's statement that all obese persons overeat was substantiated.
2. The extensive orality which characterizes the obese person is satisfied mainly by eating, for few alternative oral habits are evidenced by this group.
3. Obese women are more dependent and passive; especially was this noted in their family relationships. They are more satisfied with the role of women and have less tendency to compete with men. They feel the necessity of family support, prefer being near home; many have never been away from home.
4. Their social immaturity was also substantiated. Restrictions by the parents and the willingness of the patient to be submissive especially retarded this development. There was a less adequate maturation of sexual attitudes in the obese than in the controls.

Rennie[311] studied seven obese patients in some detail. " . . . personality factors productive of states of tension, depression, anxiety, sometimes hypoglycemic attacks may result in a considerable increase in weight during the period of personality upsets. In other cases, the obesity is definitely tied up with the psychoneurotic picture serving a specific function in the total psychoneurotic disturbance." Although these patients had rather severe emotional difficulties in adjustment which led the internist to refer them to the psychiatrist, the overeating was obviously a part of the total picture. It has been observed by others[306] that there is no relationship between the severity of the personality deviations and the overeating. This aspect of the problem is more closely related to treatment, not only of the psychoneurosis but of the overeating, a symptom of neurosis. The success or failure of the therapeutic regime will depend upon the patient, not in the usual sense, but because the overeating is an expression of the patient's personality structure and function. This latter leads to behavior antithetical to the therapeutic aim, and for reasons of which the patient is not aware. This poses a problem that must be faced in each instance and will be referred to later.

Richardson[313] speaks of the frequency of neurotic symptoms in the group of obese women he studied, particularly anxiety, feelings of guilt, and depression. Obesity is interpreted as an addiction to food instead of alcohol or drugs, as a protection against man and marriage, a substitute gratification of the individual's need for affection, sexual satisfaction, and pregnancies. It may be involved with ideas of strength, and the reducing diet represents a threat of death and suicide.

One of our patients, a 58-year-old married mother of three children was five feet six inches tall and weighed 205 pounds. She realized that she ate too much "in bits and bites" since doing so tended to relieve her nervousness. When asked about her feelings concerning dieting and reducing her weight, she remarked that she could do so easily by eating less. Then she told about how she had once had pellagra, how a sister had died of pellagra, and told of her father dying of cancer of the stomach which made him very thin. She had reduced her weight some time after these experiences, "but when I got thin I didn't feel good and the nervousness was worse." When asked how much she weighed when she was thin she replied, "160 pounds."

Among these findings are some that suggest that while excessive eating may satisfy some need in the patient and the obesity may be a secondary result, the configuration of the body also enters into the picture. An extensive psychotherapeutic study of one of Richardson's patients,[314] who became obese between the ages of 6 and 10 years, revealed some of the psychodynamics involved in her relationship with her parents. Antagonism, due to the lack of emotional warmth from both the father and mother apparently prevented a satisfactory identification. There is a clear answer as to why the oral drive was satisfied by eating, since it represented the satisfaction of the fantasy of oral impregnation. The overeating satisfied a whole gamut of emotional needs on a pregenital level, and the body configuration, becoming larger, was the expression of the wish to be pregnant.

Similar findings of Reeves[310] were derived from the study of five cases in which certain common emotional problems were solved by eating. These problems included competition between siblings for parental attention, anger at the spouse, attempts to get masculine attention, and defiance of the spouse. A more extended study in one case, similar to that reported by Richardson served to illustrate how complicated the psychological mechanisms may be behind the more superficial manifest problems. He concludes: ". . . It is evident that, (1) obesity was used both for offense and defense; (2) the pattern in some instances was sadistic and in others masochistic; (3) oral satisfaction extended beyond the socially accepted forms; (4;) obesity was utilized to simulate a masculine ideal."

Something must be said concerning the role of environmental factors in the onset of obesity in later life. This problem is especially interesting in those instances where there has been no apparent prior tendency to obesity. For instance, one of our patients (S. G.) with no familial history and no apparent tendency to obesity prior to marriage, gained 100 pounds in twelve months following marriage. This patient's menstrual history had been abnormal from the onset at the age of 13 years, with long periods of amenorrhea. There were no pregnancies during fifteen years of marriage. The patient had little sexual desire and much anxiety with reference to sexual things which was evident in her early adolescent relationships and throughout the marital life. It appears probable that an organism that is so inadequate that its adjustments are precarious, when faced with the need for further adjustment in a field of activity that is specifically anxiety-producing, will regress to earlier modes of action. Thus, the onset of puberty in children, the social requirements of adolescence, marriage, childbirth, marital discord, divorce, are all situations placing a burden upon the individual's ability to adjust. The onset of obesity is frequently coincidental with these situations.

Treatment of overweight patients has been based on the physiologic theory derived from metabolic studies and observations on the coincidence of endocrine disturbances. Emphasis has been placed on either the endocrine dysfunction or on establishing a negative caloric balance.[315] Such an approach does not offer the opportunity to follow through to recognition of the pathogenesis of the positive caloric balance which preceded it. Emphasis on the overeating versus expenditure aspect in pathogenesis has led to investigations of the dynamics of hunger and appetite. The recognition of the role of these subjective sensations in relation to overeating, which may assume compulsive characteristics, has led to two therapeutic approaches. (1) The use of drugs to reduce hunger and appetite. (2) The use of some form of psychotherapy, alone or in addition to drug therapy. Among the drugs which have been used are benzedrine (amphetamine)[310] and d-amphetamine.[306] The action of these preparations has been attributive to diminishing gastric tonus and hunger contractions. There is also the possibility of a central action, the nature and mechanism of which have not been elucidated. Of 162 patients treated with the d-amphetamine[306] only 72 continued the treatment for more than two months. The investigators felt that with more time to encourage the patients more of them would have followed through. They recognize a difficulty in this respect "because most grossly obese individuals are obsessed with the idea that their obesity is glandular and little can be done about it." Such an attitude represents a defense against one thing, and usually more: the secondary gain derived from the obesity, giving up this mode of action which tends to satisfy some need which he is afraid of recognizing and reluctant to give up.

It is obvious that the weight of the patient will not be affected by psychotherapy. The intent of such an approach is to diminish the tendency to satisfy emotional needs in a substitutive way involving food. The difficulties faced in the application of this principle will vary from mild to insuperable, and will depend upon the abilities of the physician, the capabilities of the patient for maturation, and the time that can be devoted to this method. The use of diet means to the patient the giving up a source of pleasure satisfaction or security that has been brought out in the previous discussion. It also means that these needs will have to be modified and satisfied in some other way which is acceptable to the patient and to the adult culture and society in which he lives. Selling[317] points out that the patient will weigh the temptations and eventual goals in determining his attitude toward accepting or rejecting the dietary instructions. This process may be conscious, subconscious, or both. He remarks that, "As the physician and his nutritionist see it, only one task remains to be done after the diagnosis has determined that a disease is present which needs diet therapy; to tell the patient what he can and what he cannot eat. The factors in his own personality are neglected. —If the patient is handled in such a way that he does not want to cooperate from the very first, it would be futile to spend any time with him to tell him what he should eat and what he should not." Infantile tendencies carried over into adulthood sometimes make the adult more difficult to handle than the child. The patience of the physician who is too busy to deal with the problems will not allow him to work them out with a patient who appears to be indifferent to his efforts. While attention to the physician-patient relationship will be of great help in many instances there are a number of cases where psychiatric help is necessary.

Nicholson[309] has published the results of treatment of ninety-three obese patients by different methods.

1. In a group of thirty-eight patients a detailed inquiry was made as to their developmental history, social and sexual adjustments, economic status, relationship to their family and friends, and other factors which might have had influence on their personalities. An attempt was made at superficial psychotherapy such as reassurance and interpretation. No calculated diet was given, though an explanation of energy exchange and caloric values of common foods was given. Care was taken to explain the phenomenon of water retention in order to anticipate the periods during which no weight loss would occur. A food diary was kept for three days prior to each clinic visit. No medication was given. In this group twenty-six instances were judged successful on the basis of weight loss of 5 kg. or more for one year with no relapse.

2. A second group of thirty-five patients was placed on an eight hundred calorie diet which was explained by the dietician. No medication was given and no psychotherapy was attempted. There were twenty-six failures in this group, judged on the same basis as in the first group.

3. Ten patients were given 5 mg. of amphetamine sulfate three times daily. No diet was given and no psychotherapy attempted. All patients showed a weight loss the first four weeks and then gradually regained to the initial weight. In six patients the dose of amphetamine was gradually increased to 10 mg. three times a day without additional effect.

4. Ten patients received thyroid substance in sufficient dosage to produce symptoms. No appreciable weight loss occurred until diet was instituted. The aid of a psychiatrist was obtained in the more severe emotional problems. In one of these instances with severe anxiety attacks relieved by eating, a weight gain of 22 kg. was reduced 17 kg. in the period under treatment and was maintained up to three years.

Such studies are suggestive of the practical value of attention to other aspects of treatment than the diet or appetite depressants. The following instance suggests another factor important for success in the management of obesity.

The patient, M. P., was a 15-year-old high school girl. She had been born in rural Oklahoma of parents in poor economic circumstances. A second girl was born fifteen months after the patient. At the age of 2 the patient was taken by a maternal great-aunt who was 49 years old at the time. The patient understands this was done because the parents did not get along well together and because the great-aunt had lost an infant girl child of her own. When the patient was 4 years old, her parents were divorced. The mother kept the sister. For some reason she placed her in a home for children at the age of 5, when the patient was 6 years of age. When the father found it out he took the sister to live with him a few miles from where the patient lived with the aunt. The patient dates the onset of her obesity from this time. The mother has been in an asylum for the insane since the patient was 9 years old. M. does not talk about her parents spontaneously, except to remark that she has not been able to know them very well.

The patient came to the University Hospital Clinics for the specific purpose of losing weight. Her interest had developed out of comparison of herself with other girls of high school age. She wanted to be able to look like them, to be able to swim, skate, and play as they did. This was taken as a good prognostic sign. Previous attempts at reduction under a chiropractor had been too costly, involving medicine, exercise, and treatment. A teacher of biology had taken an interest in the patient and her wish to reduce and had suggested that she come to the University Clinics. M. referred to this teacher as being "34 years old, that isn't her real age, she is 32 or 33, but that's my mother's age." The patient was placed on a diet of twelve hundred calories and no further attention paid to it. Because of the patient's attendance at school and the inconvenience of traveling an hour by bus, as well as the financial consideration of the bus fare, she has been seen one-half to one hour a week.

M. has lived alone with the great-aunt since the uncle's death when she was ten years of age. She did not have any playmates of her own age. Most of her activities were concentrated on studies and helping the aunt keep house. She feels that the aunt has been interested in her, but more interested in her own meager activities of sewing, knitting, and keeping house. M. has little interest in these things.

The same pattern was continued when they moved to the city four years ago when the aunt felt she could no longer take the responsibility of managing the farm she rented out to a tenant farmer. In fact, the patient feels she was too shy to make more friends after the move. She blushes easily when she speaks of what she would like to do. She lost one and a half to two pounds per week for the first four weeks. During the fourth and fifth week she noticed that she was becoming more hungry and had a tendency to eat more. The weight loss dropped to one-half pound in the fifth week.

As it became evident how little pleasure the patient obtained from association with other people, especially children of her own age group, this was pointed out to her with the suggestion that she obtained most of her pleasure from food. She remarked then for the first time that she had always eaten too much. This statement was followed by one that she had "'always been jealous" of her sister who lived with her father. She could not say just what this was based on, and was a little surprised, since she had seen her sister on only three or four occasions. She felt a strong antagonism toward her whenever they were together.

Following this discussion she formed a friendship with a girl of her own age at school, whose father was a minister, and started going to church with her. The hunger subsided and the weight loss increased again, so that she has lost seventeen and a half pounds in an eight-week period. It is evident that M.'s emotional development is far behind that of girls in her age group. Part of this is undoubtedly due to the early developmental difficulties and is partly secondary to the obesity which has emphasized the difficulty she had in finding herself acceptable to other people. Continuous use will be made of M.'s wish to be like other girls, to dress like them, to be able to wear a swimming suit as they do, and to do all the other things they do. There is as yet no other evidence of a heterosexual attitude compatible with her age.

There are two things of importance in this story. The patient arrived spontaneously at the decision to reduce and she has a very adequate reason which represented an approach to the problem of maturing. How successful she will be will not depend upon how well she remains on her diet, but rather on how well she will be able to develop satisfying human relationships. A decrease in the food intake would be much easier under such circumstances. In addition, it would make the maintenance of the weight reduction less difficult. The obesity is obviously only a part of the whole problem which could not be worked out without expert psychoanalytic study and treatment. For further consideration of this aspect of the course and therapy of obesity, it is important to understand the problems of leanness and their relation to those of obesity.

Nutrition and Malnutrition

Leanness, underweight, and malnutrition are terms with different connotations but with the common meaning of body weight less than the average or below the normal range. Rony[315] uses the term, leanness, in a generic sense. This is probably most satisfactory when the diversity of its usage with subtle differences is considered. Frequently, the term is used to describe a characteristic of body habitus. In this connection, it has been considered as a feature dependent upon genetic influences or a "constitutional" characteristic, the so-called "primary essential leanness" of Rony's classification. The adequacy of the term, however, is in a general usage with reference to body configuration, and a relatively limited amount of fat, not only of the human body but in the foods we eat. The term, underweight, describes a condition of body weight relative to the expected norm, frequently with the implication that there is something causing it, over and above heredity. The term, malnutrition, is usually used to denote a more marked degree of quantitative disturbance of the nutritional state, and when very marked the term "cachexia" is applied.

In contrast to obesity, study of the etiology and pathogenesis of leanness generally has had much less attention. The principle of caloric balance is applicable in leanness as it is in obesity. This does not necessarily mean that the one is the opposite of the other except in the case of the caloric balance and the body configuration. Rony emphasizes heredity and endocrine function as the dominant factors controlling the level at which the intake-expenditure mechanism operates. As in obesity, with recognition of the role of hunger, appetite, and satiety, variations attributable to psychic influences assume an important place in pathogenesis. Such influences are recognized even in the malnutrition of tuberculosis and other chronic infections, hyperthyroidism, malignancy, in addition to the metabolic imbalance effected by these conditions. Efforts are made to present food in an "appetizing" way, to cater to the special tastes of the patient whenever possible, in an attempt to overcome the psychic and metabolic effects of the illness in regard to nutrition. The patient is taken care of in much the same way as if he were a child in this respect.

It would not be surprising, in view of the extensive evidence presented for the background of obesity, that psychic factors would play a major role in determining the food intake in leanness unassociated with other conditions. As is the case in obesity, the relationship of endocrine function to the food intake-energy expenditure mechanism and the psychic factor are uncertain, with the exception of less frequent conditions of hyperthyroidism and Simmonds's disease (pituitary cachexia). In the latter, there is not the same definite information to explain the loss of weight as is the case in hyperthyroidism, and in this instance the increased food intake is not constant, being influenced by vitamin deficiencies as well as other inconstant circumstances, including the psychic.

The feeding problems of children include rejection or avoidance of food as well as overeating. The surface problems that are generally recognized consist of early nursing difficulties in suckling, difficulty in changing the quality or consistency of food, finickiness, dawdling, rejection of single foods or of all foods, and vomiting.[317] Pediatricians are familiar with the effect of somatic disturbances on these symptoms, and are aware of the role played by the attitudes and actions of the mother in their genesis and treatment.

A more fundamental approach to the study of eating inhibitions in children is that of Rose.[323] He suggests that resistance to the feeding urge as a pattern of behavior actually antedates feeding. "The difficulty which many children encounter in 'learning' to nurse seems likely to be better understood as opposition to feeding and a new state of psychobiological integration." In other words, the individual resists change which demands an extension of his adjustability. "Thus, we see that eating, a fundamental activity, which both signifies and engenders change, may be resisted from the very first, because the growth it carries with it brings new organization. This universal significance of eating as the equivalent of growth and change almost guarantees that it will be opposed in one, or more, stages of individual development." Here again, the parent's relationship to the child should provide support for the child to overcome natural resistance to emotional growth and maturation, as well as giving positive stimulus to it. Difficulties arise from: (1) Rejection of the child by the parent, especially the mother. (2) The mother's fear of change for the child with reference to new forms of activity, which increases the child's resistance to change (growth), and the separation from the mother which it implies. Not eating may be a mechanism by which the close relationship with the mother is maintained. Rejection of food by not eating or by vomiting may also be utilized as punishing action directed toward her for her own rejection of the child. In the study of older children, the most severe eating disturbances occurred in those whose parents were severely neurotic themselves.

The onset of menstruation carries great significance of growth, and the onset of anorexia at this time is interpreted as resistance to growth and change which is being, as it were, thrust upon the child from without, and intensifies the demand for love. This may be expressed aggressively as a demand for food or, negatively, by refusal. In the first instance, obesity may result; in the second, leanness. They may alternate, the obese child becoming lean in response to the shift in the oral expression of the dependent search for love. The predominance of severe anorexia in females after adolescence may be ascribed to fear of the feminine role in adulthood as it conflicts with an inadequate psychosexual maturation in the preceding development and represents a further growth step. The occurrence of severe psychological anorexia in boys is also attributed to the fear of growth and separation from the mother. The author concludes that the special form of anorexia called anorexia nervosa occurs as an entity when specific oral impregnation fears are found, and is only a part of a large group of related anorexias. The fundamental problem of psychological anorexia may be the same in males and females from birth; that is, resistance to giving up old and assuming new forms of psychobiological integration.

There has been a great deal of debate over the relationship of two rather striking conditions of leanness, one known as Simmonds's disease or pituitary cachexia, the other described by Gull and known as anorexia nervosa. While the first is rare and severe, anorexia nervosa is uncommon; milder degrees of leanness depending upon the same psychological background are rather common.[247] The clinical pictures presented in each instance are very similar,[319] including predominant incidence in females, anorexia and/or vomiting, asthenia, marked loss of weight, amenorrhea, impotence, and loss of sexual desire. A diminished basal metabolic rate and low glucose tolerance curve are frequent but not consistent. Certain differences are apparent although there is overlapping in all but one respect. The appearance of aging and loss of axillary and pubic hair is greater in Simmonds's disease than in anorexia nervosa. In the latter, the extremity and body hair is frequently increased. The diagnosis of Simmonds's disease is verified only by the demonstration of destruction of the adenohypophysis. In the absence of anatomic abnormality of this organ the diagnosis is changed to anorexia nervosa.[132]

Escamilla and Lisser[319] reviewed the experimental work in animals suggesting that "the status of these hypophysectomized animals simulates closely the clinical picture of Simmonds's disease." It is difficult to interpret this in the light of Heinbecker's[272] work on dogs from which he concluded that removal of the pituitary led to changes in the thyroid, adrenals, and gonads which he felt were involved in the pathogenesis of the subsequent obesity of these animals.

The available evidence indicates that the primary psychic abnormality in anorexia nervosa derives from early emotional developmental difficulties as described by Rose. Severe leanness of this type is seen in children, but the total picture can develop only after physiologic sexual maturation has passed the pubertal stage. Similar evidence is not available for patients with Simmonds's disease; therefore, we have no knowledge of the preceding psychic development. The hypothesis that anorexia nervosa represents a functional pituitary failure,[324] relatively less severe than that following the adenohypophysial destruction will necessarily depend upon accurate hormonal assays correlated with anatomic changes. Bartel[318] collected the work related to the determination of gonadotropins in the urine of these patients. The report on several cases of Simmonds's disease suggests a diminution, whereas in anorexia nervosa about half of the cases showed normal values and half reduced values of the gonadotropins were not demonstrable. The interpretation of the urinary excretion of these substances as measured at present, and without reference to blood levels, especially in single specimens or short term experiments, is practically impossible.

Certain psychic phenomena, appearing in the course of the illness, have been noted in about half of the reported cases of Simmonds's disease. These include apathy, dullness, drowsiness, confusion or disorientation, and depression. Some of these patients have been confined in mental institutions. This circumstance reminds one that psychic phenomena are observed in a fairly high percentage of patients in Cushing's syndrome. Nicolle[321] classifies anorexia nervosa as latent schizophrenia. Similar observations have been made by others.[322, 325] Writing on "prepsychotic anorexia" Nicolle[321] differentiates Simmonds's disease from anorexia nervosa on the basis that weakness, lethargy, and somnolence are prominent in the former compared to the excessive activity and obstinacy seen in the latter. A rather marked unconcern has frequently been observed in patients with anorexia nervosa in contrast to the severe degree of cachexia.

On the other hand, Richardson[132] found, as have others, that there is marked difficulty in distinguishing these two syndromes clinically, the first impression being altered by further psychiatric study or at autopsy. Replacement therapy cannot distinguish them because of inadequate potency of the preparations and because of the psychological effects of "injections." Richardson remarks: "The history of these separate developments of medical thought on the twin subject of Simmonds's disease and anorexia nervosa is an instance of the difficulties which arise from too specialized an approach, whether the emphasis is on the physical or on the mental aspect. It is an illustration also of the extreme complexity of disease in man and the necessity for evaluation of all of the factors, if further progress is to be made."

In a later publication of Rahman, Richardson, and Ripley,[322] the factors of body habitus, endocrine dysfunction, and emotional and environmental influences were presented in their bearing on the problem. Body habitus was consistently asthenic. It could not be said that the endocrine disturbances (evidenced by amenorrhea and changes in the vaginal smears) were secondary to the inanition since they frequently occurred prior to the loss of weight, and not infrequently persisted after weight gain. The low basal metabolic rate was, however, apparently due to the inanition and not to thyroid deficiency. The administration of thyroid substance to one of their patients was followed by a rapid loss of weight. They refer to similar experiences by others. The authors did not feel that they could emphasize the endocrine defect in the pathogenesis. They refer to Shedon's hypothesis of a functional pituitary failure of emotional origin in this respect, but conclude that the primary difficulty is in the emotional sphere, possibly conditioned by a defect in endocrine development.

A study of changes in the vaginal smears and rectal temperature as evidence of altered ovarian activity, correlated with changing emotional reaction and the anorexia and vomiting, was carried out by Moulton.[320] Her observations appeared to indicate that as ovarian activity increased (simulated by replacement therapy) the patient's symptoms were aggravated and weight loss occurred. This was attributed to an increase in awareness of sexual feelings which aggravated the patient's emotional conflict over the female sexual role, oral impregnation fantasies, and fear of pregnancy. This in turn led to the vomiting as a rejection of the erotized food. "Menstruation was obviously a threat in all four, and was reacted to violently or repressed. The common purposes of starvation are to prevent the onset of menses, prevent pregnancy, and prevent growing up, which means facing man and marriage."

Waller, Kaufman, and Deutsch[325] analyze literature and remark on the consistency in the psychological circumstances in the background of the reported cases. They list these as: (1) There is an open conflict between the family and the patient. This is particularly true of the mother-daughter relationship. (2) There is often a history of a preceding overeating and obesity; this excessive eating may alternate with the anorexia. A frequent history is that the patient was ashamed of being fat and then dieted until the cachectic stage appeared. (3) Disturbances in the sphere of sex are characteristic: in the female, amenorrhea; in the male, impotence. In both, absence of sexual desire. The menstrual history may show all kinds of irregularity. (4) The obesity and amenorrhea occur early in puberty at a time of attempting adjustment to outside environment. (5) The anorexia, with the full-blown clinical syndrome, appeared at a somewhat later period, when adjustment of great psychological significance for the patient must be faced. (6) Parental pressure in the attempted solution of these problems aggravates the family antagonism. (7) Family history of neurosis or psychosis is frequent. The specifically significant neurotic behaviour of the parent, particularly the mother, takes the form of overemphasis on eating. The mother describes the patient as a "finicky eater" and the patient describes the mother as "oversolicitous and overbearing" in regard to matters of eating. (8) The secondary gains of the neurosis are frequently at a conscious level and the patient admits the desire for attention and sympathy, and the attempt to divert the parental attention from the other siblings to herself.

The relationship of this syndrome to obesity, in the pathogenesis of each, is seen in the shifting of the dynamics of the neurotic conflict[323, 325] as it bears on the gratification of emotional need by means of food which has been endowed with emotional meaning through the early experiences of the patient. "Thus, gratification of the fantasy of becoming pregnant may be expressed by overeating or gorging. When, however, guilt or anxiety arises in relation to this gratification, rejection of food ensues."[325]

The following case history illustrates the development of the syndrome under the influence of psychological pressure.

Although the story is necessarily incomplete in detail, indications are present throughout to show the specific preparation that this patient had in her early life for the ultimate development of the illness under such appropriate circumstances.

The patient, M. T., was a 25-year-old married woman. She was quite slender; the bony structure of the face was rather prominent, and the patient appeared to have lost a fair amount of weight. This actually amounted to a loss of forty pounds in five months. She complained of nausea, vomiting, abdominal pains, and amenorrhea during this same period. In addition, she had had fantasies of injuring or killing her five-month-old baby, and of suicide for the past week or ten days. She appeared relatively untroubled by these difficulties, though she expressed fear of the fantasies and had given up bathing and dressing the baby and going out by herself. She was a nurse and recognized the emotional basis for her symptoms.

She was the second of three children. She had an older brother, 27 years of age, in the Navy, and a sister, 20 years of age. The parents had been divorced when the patient was eight years old. She had been closely attached to her father and felt quite guilty toward her mother for maintaining contact with him by letter after the divorce. She felt that the attentions she received from him after the divorce really belonged to her mother. This feeling was accentuated at the time of her graduation from high school when her father sent her a dozen red roses. The mother cried and the patient felt that it was wrong for her to receive them from her father when he had given nothing to her mother.

The father had remarried when the patient was fourteen. She had gone to visit him soon after the marriage and had insisted on sleeping with him so his wife could not do so.

After graduation she had entered nurse's training. She met a young man at the nearby Naval Training Station and married him after she finished training. They lived with her mother. The sexual relationship was very satisfactory except that she felt guilty if she thought her mother might overhear them. Two pregnancies resulted during this period, both ending in spontaneous abortion. She thought one was precipitated by a fall and the other by bumping against a carrier in the hospital corridor. She referred to them as "abortions" in her letters to her mother-in-law.

Two years after their marriage they moved to California when the husband was transferred. They lived together happily until he was discharged at the end of the war, at which time they moved in with his mother and father. The mother was quite possessive toward him. Her own marriage had been unsatisfactory. Her husband had become a chronic alcoholic during their life together. She soon assumed full charge of her son's married life. The patient felt that they had no free time together at all, that they could not go as they pleased. The mother assumed that she was included in all their activities. One time she hid the car keys so they could not go out without her. The patient described how, in order to talk with her husband alone when he came home from work, she would have to go into the bathroom with him. Her mother-in-law disapproved of this.

The patient felt very inhibited in her sexual relationship with her husband if there was any possibility of the mother-in-law being within hearing range. The mother-in-law had changed her sleeping arrangements from the room with her husband to a room next to that of the patient and her husband.

The patient's husband verified his wife's statements about his mother's possessive attitude toward him. He felt that she resented his marriage and his leaving the Navy, but also that she would get over it when he became well established otherwise.

In the course of events the patient became pregnant. There was some morning nausea. In the sixth month of the pregnancy, the mother-in-law told her she would kill the baby if she didn't stop having intercourse so often. She referred to the previous "abortions" in a way that made the patient feel she was accusing her of having them induced. The patient was Catholic and felt very guilty and resentful about this. She immediately became genitally frigid. She still felt strong sexual desire but it disappeared immediately and she would become anxious and unable to continue at the point of intromission. The nausea increased and she began vomiting moderately but not enough to lose weight.

The baby was born at term and the patient's condition improved somewhat. She began nursing the baby. Two weeks after the delivery she had a sudden uterine hemorrhage and lactation ceased completely. The nausea and vomiting occurred again and persisted. She began to lose weight rapidly. Both the patient and her husband felt that much of the trouble was due to the attitude of his mother. They therefore decided to move out. In order to do so they had to buy a house for more than they could afford. It was located twelve miles from his mother's place, but this did not affect the unwelcome attentions and advice that she continued to give. Finally, the patient decided that she would be better if she could return to her own home and mother. She did so, but instead of becoming better she became worse and began having the fantasies of injuring or killing her baby or herself. She could only go out on the street if her mother went with her so the patient could hold on to her. She could not even wheel the baby carriage; the mother had to do that. At this point the patient sought aid for the emotional disturbance which she felt provided the basis for most of her symptoms.

Following the two interviews in which most of the foregoing material was elicited, there was a rapid disappearance of the symptoms, largely on the basis of the developing reassurance in the relationship with the physician. She then began to talk of her husband coming to visit her and her belief that if she could re-establish a satisfactory sexual relationship with him she would be in a better position to maintain the improvement. This was followed by a recurrence of the nausea related to a certain food. When this was followed up it led to the fact that at the onset of her frigidity she had regressed to fellatio. This in turn led to the recollection that when her mother had become pregnant with the patient's younger sister, the patient had been afraid to eat certain foods for fear that she might become pregnant also.

In the course of further interviews, it developed that the patient had the feeling that everything she received she should share with her mother. This included furniture, money, and even her own baby. She was reluctant to think of taking him home with her, and thus leave her mother alone again. She recalled a plan she had thought of while still in California; to start a nursery for taking care of children and inviting her mother out to share in the project.

All of her anger was focused on the mother-in-law and she didn't want to go home again for fear that her symptoms would recur. Two weeks later her husband came to visit her. She prepared for it by renting a room away from her mother's home. Their sexual relationship was at first satisfactory. Then she went to a movie with her mother and husband. In the movie the woman killed the man she loved because he chose another woman. At home afterward while she was in the kitchen with her husband she noticed a hammer and couldn't take her eyes off of it. She spoke of it with anxiety and the fear she had that she might pick it up and hit him with it. Her anger toward her husband became manifest as she talked of her feeling that he did not appear to side with her sufficiently in the difficulty with her mother-in-law. Subsequent to this interview, her sexual relationship with her husband was more satisfactory than it had ever been. She was once more able to feed, bathe, and care for her baby without the fear of injuring it. Her appetite was good and she gained weight. She looked forward to going back to their home, although she still was worried about the effects that renewed contact with her mother-in-law might have.

The clinical material obtained by Lorand[129] over a two and one-half year psychoanalytic study and treatment of a patient with anorexia nervosa should be read. It contributes much to the understanding of the total problem, and lends confirmation to the interpretation of material gathered by less extended study[132, 322, 323, 325] and may serve as representative of the detailed psychoanalytic approach in this problem. Excerpts from the final formulation will give evidence for this, their complexity, and some idea of the difficulties of curative therapy.

"To understand the meaning of the symptoms of the case under discussion, it is well to remember that a neurotic symptom is a substitute for a desire which cannot be gratified because of external or internal reasons. In this case, all the disturbances seem to have as their primary cause the reaction to the mother's attitude from earliest infancy. The whole symptom complex centers around the problem of how to deal with her, and later with the indifferent father. They were the two people who made her, as she termed it, 'starve'. . . .

"She remained to a great extent infantile, defending herself from anxieties which were revived by growing up.

"In her early childhood, she remembered being like a little beast who wanted to eat up and tear up everything and everybody. Her jealousy started with sibling rivalry as early as the age of two. At this early age, her father became linked with her oral craving. From then on, these desires carried charges. The desires which primarily concerned mother's breast, food, and getting love from mother became in later stages identified with desire to have everything mother possessed . . . including father's love. This, in turn, was associated with early ideas of oral impregnation. . . .

"The self-punishing tendencies in her symptoms were outstanding. She recognized them as representing simultaneous punishment of her parents as well. They wanted love when she could no longer give it. Instead she gave resentment and worry. Her symptoms were also an attempt to win affection. For now, in her illness, she became the center of anxious attention as never before. . . .

"The analysis of this patient proved, without questions, that the oral symptoms—her reaction to food—served to realize other fantasies which were of primary importance to the patient. . . . All symptoms centering around eating could really be transposed to her problems of sexuality. In the deepest layer, there was the primary desire for impregnation, to become fat, to have a big abdomen. The guilt, however, associated with that desire, resulted in the expression of the opposite, namely a denial by expulsion, or vomiting out the stomach contents, all of which indicated the danger of "getting fat." The fantasy of oral impregnation was clearly proven in the course of analysis, when she used as a defense nausea and loss of appetite to prevent her dates with men. . . .

"She considered herself abnormal because in early childhood she had always ailed and complained. This she connected later with sexual disorders. With the onset of menstrual disturbances, she was sure that this was so. She ceased to menstruate. Amenorrhea expressed denial of femininity. At times, she wanted to be an 'it,' neither man nor woman, but a sexless child. . . .

> "The symptoms were all elaboration and acting out in the somatic sphere. The somatic sensations which were closely bound up with emotion in infancy and childhood became a carrier of all kinds of emotional involvement. Feelings concerning mother, father, sister, brother, and representatives of the outside world could elicit disturbances in the gastrointestinal tract. Emotional reactions agaist people which could not be verbalized would attempt expression through the same channels which were employed for this purpose in early childhood. All the bitterness and pain which related to the earliest disappointments by mother, and which were primarily bound up with feeding, care, affection, remained the source of her permanent distrust of everybody."

The problems of therapy in leanness, underweight, or malnutrition are multiple, including the availability of food and the financial ability to buy it. They include the patient who is underweight as the result of chronic or severe acute infections and the resultant metabolic disturbance heightened by fever. The hypermetabolism of thyrotoxicosis increases the organism's caloric need as well as the need for supplementary food substances. The negative nutritional balance induced by malignancy, particularly of the gastrointestinal tract, or the later stages of a spreading malignancy; by diabetes mellitus; that observed in the steatorrheas, pancreatic or idiopathic; acute and chronic infections of the intestinal tract; all of these affect the nutritional state of the patient and enhance this effect by adversely affecting the patient's hunger and appetite. These phenomena may be more or less rapidly reversed by treatment of the hyperthyroidism, diabetes, or amebiasis as the case may be, and with a satisfactory response by the patient's hunger and appetite. In contrast to this stands the apparent high mortality in Simmonds's disease. The value of endocrine preparations in this condition is *sub judice,* though as Escamilla and Lisser[319] point out with reference to the clinically typical recovered cases, "However conservative or skeptical one may be, a careful reading of many of the protocols forces one to believe that in some cases specific pitutiary therapy must be given credit for the extraordinary improvement which occurred." It is a most difficult decision since we cannot as yet be certain that pitutiary function is significantly disturbed short of the demonstration of anatomic destruction.

The more severe and deep-seated problems of food rejection in childhood have been referred to. Selling[317] remarked that, "The study of children's feeding problems is important if only to reduce the discomfort felt by parents who have to contend with a problem feeder." He emphasized the prophylactic value of breast nursing, from both the aspect of the child's development and the emotional maturation of the mother for her present and future relationships with the child. To understand the problem presented by a particular eating habit (rejection of certain foods, dawdling, restlessness at the table, finicky eating, or chronic refusal of all foods) it is necessary to know the child's position and relationship in the family constellation. Early relationships are dependent upon the attitudes of the mother, father, and siblings. The physiologic disturbances which may lead to aversion (e.g., food allergy) must be considered. The psychological factors are multiple. The management of the simpler problems may be obvious. The more difficult ones require the attention of a broadly trained pediatrician. He in turn will recognize those that require expert child guidance care and psychiatric help for the child and the family.

Selling[317] presents some twenty-two rules for the parents' guidance. They make recommendations concerning the eating arrangements and utensils for the child, the example set by the parents, eating between meals, the parents' attitude toward eating, talk of likes and dislikes with reference to food. They are of help to the parent who is well related emotionally to the child. Otherwise, they could be used to further the parents' ends without reference to the optimal development of the child. The eating habits of the adult develop out of those of the child, and the treatment of them becomes more difficult as their background becomes more complicated.

The problem of dietary therapy under any circumstance involves a consideration of the food habits and customs of each patient, as well as his personal likes and dislikes for specific foods or classes of foods. It is not unknown for a quantitative or qualitative nutritional disturbance to depend upon an exaggeration of the usual eating habits and without concern for the patient's intelligence or economic status. The physiology professor who develops ariboflavinosis following upon inadequate nutrition resulting from his preoccupation with his scientific problems is in much the same position as the socialite who neglects her nutrition for a series of teas and cocktail parties and develops a "lean and hungry look," both of them in pursuit of satisfaction to the exclusion of better eating habits. The therapeutic problem might well differ in its complexity in these two instances.

The ultimate of leanness of psychogenic origin, anorexia nervosa, presents the most complicated problem of all from the standpoint of curative therapy.[129] Attempts to treat the symptom, anorexia, without consideration of its background may be successful, or frustrating for the physician and even fatal for the patient.[322] It is generally agreed[129, 320, 322-325] that the more severe cases are best treated in the hospital away from the family influence. It may be even necessary to avoid family visits to the patient. At times it may be impossible to treat the patient because of family interference. Rose[323] suggests that treatment of the child will be best served if the parents also are treated. In the case of the adult "it is important to get the patient away from the home situation and to institute a regular regimen, using firmness but not inflexibility. Occupational and other activities and socialization are needed to utilize the time constructively and to prevent these patients from dwelling on their obsessions. As is common in psychoneurosis of the compulsive type, psychotherapeutic attempts were as a rule met with extreme resistance. These patients require much time and patience, and their undercover hostility makes it impossible or difficult to establish a satisfactory therapeutic rapport with the physician."

A thorough understanding of the pathogenesis of the illness through study of the emotional development of the patient in relationship to the family, particularly the mother and father, is necessary. Whatever psychotherapy is attempted, should depend upon the understanding of the physician of what he is doing. The

Weir-Mitchell treatment consisting of bed rest, separation from family contacts, a nutritious diet gradually increased as the patient accepts it, and discussion of difficulties which are close to the surface and easy for the patient to comprehend, is practical for most physicians without special psychiatric training. This type of approach to the emotional problems is well discussed by Weiss and English[247] with reference to a 19-year-old girl. The loss of appetite and weight began at the point where she was advised by a physician to cut down on sugar and starches in her diet as therapy of a slight facial eruption. Trying to force her to eat aroused her hostility, a common reaction in these patients. Tube feeding should be avoided except as a last desperate resort. Attempted suicide has been observed,[322] and milder reactions more frequently, following this procedure. Most frequently patients deceive the physician, disposing of the food by hiding it or in other ways. They may increase their apparent weight by hiding some heavy object on themselves when being weighed. All of these stratagems may be exasperating to the doctor if he does not recognize them as measures by which the patients protect themselves from something that they fear. In dealing with the patients' emotional reactions, their activities or lack of them, it is not possible to get to the roots of the difficulty, and attempts to do so will separate the patients from the physician. The surface problems in everyday living, feeling, acting, and personal relationships are the material to be dealt with. Patients who do not respond to these methods should have further psychiatric help.

CHAPTER VIII

ARTHRITIS—RHEUMATOID ARTHRITIS

Jacob Arlow, M.D.*

Introduction: Disturbance of Tone and Posture

From the very beginnings of modern psychiatry, musculoskeletal disorders occupied a prominent position of interest. Disturbances in motility, such as paralysis, tics, and involuntary movements, were among the first of the classical symptoms of hysteria to be investigated. The amenability of these symptoms to modification via suggestion or hypnosis served as the point of departure for investigation into the role of unconscious influences upon somatic function. Except for the observation that generalized hyper-reflexia might constitute evidence of emotional tension, few observations were made concerning the possible influence of psychic factors upon the tonic status of the musculature. Least attention was paid to the problem of psychic conflicts relative to pains originating in muscles. In recent years, however, this latter defect has been corrected.

On more mature reflection it is not at all surprising to anticipate that conflicts over instinctual impulses will express themselves in muscular dysfunction. It is, indeed, the ordinary aim of every instinctual impulse to seek ultimate expression in some form of motility, some act toward the self or the environment which in the last analysis is executed by the muscular system and the supporting structure which it manipulates. Conflict over such impulses may be reflected in constricted motor-activity. The impulse to execute a forbidden wish may be effectively vetoed by paralysis, hypertonus, hypotonus, dystonia, spasm, or by pain which may become manifest in the attempt to perform the forbidden act. The aimless manual restlessness of some adolescents, for example, may represent the motor aspect of the psychological conflict concerning the impulse to masturbate. A person of calm voice and facies may betray an unverbalized tension in the form of a clenched fist or some postural rigidity. Either of these phenomena may escape his awareness completely.

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* Research Associate in Psychiatry, Presbyterian Hospital, New York, N. Y.

Disorders of motility usually have a more complicated structure than has been indicated. Paralysis, tics, and abnormal involuntary movements may represent conversion symptoms. Some of these findings, however, are intimately related to subcortical cerebral pathology. Several studies of parkinsonism have demonstrated a character formation similar to that seen in patients suffering from the obsessive compulsive neurosis. In parkinsonism, however, there is a pronounced tendency toward impulsive expression in overt muscular behavior. These trends antedate the onset of muscular dysfunction by many years. The uniformity of characterological findings is very striking. It is possible that organic cerebral changes, by interfering with the normal processes of controlling the emotions force the individual to adopt more strenuous defenses against his impulses. Tourette's disease presents a striking combination of multiple tics in the presence of compulsive profanity and coprolalia. Although the disease has a definite psychological basis and can be ameliorated through intensive psychotherapy, most authoritative opinion holds that subcortical changes in the brain are basic.

Pronounced muscular disorders, part of definite neurological syndromes of unquestioned organic nature which followed upon some severe emotional trauma, have been observed. In these cases Wilson and Rupp state,[363] "Consideration of the previous personality make-up often further confirms the general impression of an emotional determination of the symptoms. Such cases showed prior evidence of an unstable integration, inadequate to bear the burden of super-added emotional stress .... In retrospect, the initial minimal neurological signs might have been interpreted, in the absence of emotional trauma, as the earliest manifestation of a structural lesion, but in the intense emotional setting, these signs were not sufficient to establish definitely the exact etiology."[363] Among these conditions were included cases of post-encephalitic parkinsonism, multiple sclerosis, pseudosclerosis, and dystonia musculorum deformans.[329] The precise etiological relationship of such phenomena is still unclear. Rabiner and Keschner[358] state that in certain organic neurological conditions the disease may occur in two stages: an earlier psychic and a later organic phase, the former producing the latter through the medium of the vegetative concomitants of prolonged emotional stress. Wilson, Rupp, and Bartle,[363] on the other hand, were not ready to accept such a hypothesis, especially in cases where extensive neurological findings appear very shortly following the emotional trauma. Nevertheless they did not feel they could dismiss the role of emotional factors as purely coincidental. They felt that emotional disturbances may act as a precipitating factor, suddenly aggravating through physiological changes, areas which had been affected previously to a greater or lesser degree. Continuance of emotional stress makes the individual more aware of his own body sensations and accelerates the progress of the lesion to the point where frank neurological signs appear.

Posture

Posture is perhaps among the most striking expressions of the individual's attitude toward the environment and toward himself. Although this fact is popularly recognized, the psychology of posture deserves further detailed study. In posture, psychological attitudes become manifest through alteration of muscular tonus. These changes may be generalized or localized, habitual or transitory, part of a definite complex of emotional behavior or an individual isolated expression. Psychological contents cannot always be directly translated from the apparent postural attitude. While it is true, for example, that persons who feel depressed and who regard themselves as worthless, will keep their heads bowed, it is equally true that an arrogant person who feels superior to his environment, may keep his head bowed in order to prevent his posture from betraying his true feelings. Excessive preoccupation with the significance of posture frequently indicates that the entire problem of posture has a deep-seated sexual significance. Certain mannerisms may be regarded as localized postures. The "hand in the coat" stance of the psychotic with Napoleonic delusions may be seen in sane individuals with unconscious fantasies of grandeur.[334]

Transient increase of tonus may be evidence of anxiety, suppressed rage, fear, spite, or an attempt to control the expression of emotion. A middle-aged woman who had undergone hysterectomy, developed the following postural attitude while discussing her destiny of childlessness; her left knee and ankle were held in extreme tonic flexion. She denied that she was unduly perturbed by her unhappy fate. When the tenseness of her musculature was called to her attention, she immediately relaxed her left limb and simultaneously broke into bitter tears.

Hypertonus

Generalized hypertonic states are frequently related to prolonged, inhibited aggression. Such muscular attitudes may give rise to states of chronic fatigue and, according to Weiss,[247] may through protracted effects upon the subjacent supporting tissues produce secondary anatomical alterations leading to the clinical entity known as fibrositis. Jelliffe,[349] Booth,[328] and others are of the opinion that prolonged muscular spasm over joints may predispose the joints to the development of articular pathology. Muscular tension during periods of emotional conflict followed by relaxation after successful psychotherapy are common exerpiences. Such a relaxation may involve a few muscle groups or the entire muscular system.

Not infrequently, tonic changes in muscles, induced by emotional conflicts, may be so severe as to lead to an erroneous diagnosis of some muscular or neurological disease. Ripley and his colleagues[359] reported several cases in which the response to psychotherapy was an important differential aid in establishing diagnosis. Conversely, organic diseases of the musculature may cause severe psychic as well as physical embarrassment. In such instances, the total complex of psychobiological factors in the patient's life will dictate the nature of his adjustment to his infirmity. A physician whom the patient trusts may exert a powerful suggestive influence enabling the patient to function at the maximum level of his ability. These authors reported that under such circumstances "there may be an actual relaxation of muscles so that spasticity is decreased and fatigue lessened, enabling the muscles to work more efficiently."

Hypotonus

Hypotonia may be localized or generalized. Generalized hypotonia is the outstanding finding in the vague clinical entity known as visceroptosis. In this condition visceral and striated muscle seem to be involved equally. This entity is probably a clinical composite of several different psychoneurotic conditions. Neurotic elements, especially phobias and anxieties, are frequently most pronounced. While strong constitutional elements play a significant part in this condition, psychotherapy not only affects the emotional status of the patient but also has been known to exercise a beneficial effect upon muscular tonus. The combination of clammy hands and muscular hypotonus is seen in certain neurotic individuals with conflicts over masturbation. This combination is also met with in early cases of schizophrenia. Tonic disturbances of musculature are characteristic for this latter condition. The flexibilitas cerea of catatonia is best known, though all sorts of tonic disturbances may be encountered; for example, flabbiness, spasms, tics. Depressed or absent reflexes, on the basis of hypotonia, are a common neurological finding in the examination of neurotics. Hysterical astasia-abasia and the tonelessness of persons fainting in the presence of certain emotional traumata demonstrate that hypotonia, like hypertonia, may serve as a defense against the impulse to carry out forbidden instinctual drives.

Dystonia

Dystonia may represent the vicissitudes of the struggle between a motor impulse and a tendency to block the intended action. Numerous authors have commented upon the relationship of such conditions and the phenomena of parturition and certain gynecological difficulties, e. g., partial uterine prolapse. Fenichel[338] believes that psychogenic dystonia may be the decisive etiological factor in conditions like torticollis.

The psychotherapeutic approach to the conditions mentioned must be regarded from the point of view of the total personality and adjustment of the patient. Most of these conditions represent fragments of a more deep-seated emotional maladjustment. On the other hand, certain conditions indubitably organic in nature may be influenced in part through psychotherapy. Not only the adjustment of the patient to his illness but the value of the illness in an environmental adjustment must be considered.

Concept of Rheumatism

Pains in the muscles or joints are grouped together under the term, rheumatism. This is a completely unsatisfactory designation. Included in this category are many distinct as well as ill-defined clinical syndromes. Although they share a common symptomatology, the severity and the clinical course of these conditions diverge widely. In many instances, the causative elements are only partially understood, if at all. The term, rheumatism, moreover, includes some conditions in which no physical findings are to be ascertained, as well as other conditions which demonstrate definite patterns of organic changes in the bones, the muscles, or the associated connective tissue structure. Because the diagnostic criteria have been most unclear, in many instances it is difficult to evaluate the relative weight of etiological factors as well as the efficacy of therapeutic measures.

The incidence of chronic disease is increasing in a relative and absolute sense. Of the chronic diseases causing prolonged disability, Osgood[357] states that rheumatism is the most prevalent. Symptoms referable to the muscular or skeletal systems presented major problems of diagnosis, treatment, and disposition to military medical officers. As an outstanding contributor to the incidence of disability and dependency, rheumatism is a public health problem of first magnitude. It was, in fact, in connection with his public health responsibilities of estimating disability from rheumatic conditions that Halliday[345] began to observe and call attention to the role of environmental stress and emotional disability in these disorders.

According to the structures involved, rheumatic conditions have been designated as articular or nonarticular. Certain aspects of nonarticular rheumatism are quite baffling.

Psychogenic Rheumatism

Symptomatology may be extremely marked in the absence of physical findings, and conversely, nodules, thickenings about the joints may be found in patients who are entirely free of symptoms. Through what mechanisms symptoms or physical changes are brought about is not yet entirely clear. Many investigators have observed, however, that trophic, metabolic, endocrinological, and vasomotor phenomena related to rheumatic symptoms and physical findings may be influenced or initiated by emotional forces.

In this connection, the findings of Boland and Corr[327] are particularly illuminating. They surveyed 450 cases of arthritis and other rheumatic conditions admitted to an Army hospital. On the basis of their observations they suggested a separation of the cases into three categories:

1. Pure psychogenic rheumatism—cases with musculoskeletal symptoms but no associated physical findings.

2. Superimposed psychogenic rheumatism—cases which presented musculoskeletal symptoms in the presence of physical findings. These physical findings, however, were not sufficient to account for the number or the extent of the symptoms.

3. Organic rheumatism and allied disorders—cases in which the physical findings accounted for the symptom pattern.

One-fifth of all the patients fell into the category of pure psychogenic rheumatism; one-seventh of the patients were considered as superimposed psychogenic rheumatism. The incidence of pure psychogenic rheumatism was relatively higher in the peripheral joints. The incidence of superimposed psychogenic rheumatism was relatively higher in cases with back symptoms. This may be due to the fact that anatomical alterations of questionable relation to physical symptoms are normally not uncommon in the spinal column.

According to present-day diagnostic categories all the cases in the class designated "pure psychogenic rheumatism" and most of the cases in the class designated "superimposed psychogenic rheumatism" would be classified as some conversion symptoms, usually hysterical, by which the emotional conflict was finding symbolic expression in musculoskeletal disorders. Boland and Corr[327] studied a representative group of patients in the first category for evidence of emotional disorders. In almost every instance other psychoneurotic symptoms were found, as well as clear-cut emotional and adjustment difficulty antedating military service. The possibility that identification with relatives may have played a very important role in the determination of symptoms is indicated by the fact that in one-third of the patients studied there was a family history of rheumatism, occasionally involving precisely the same joint which later was affected in the case of the soldier. The classification suggested by these authors is valuable, however, because most cases are first seen either by the general practitioner or by the orthopedic surgeon.

Contrary to previous reports psychogenic rheumatism is encountered frequently not only in military but also in civilian life. Halliday[347] is of the opinion that from 30 to 42 per cent of all arthritic and nonarthritic rheumatic cases are psychongenic in nature. He feels, furthermore, that almost all nonarticular rheumatism may be psychogenic.

Psychogenic rheumatism may manifest itself in manifold ways throughout the body. Pain is undoubtedly the outstanding symptom. It may occur where the involved limb is at rest or it may appear only when the limb is set in motion. Limitation of movement may be due to pain or to muscular spasm. Tender areas with or without the presence of nodules may be especially striking. The response of the patient may be so severe as to suggest some deep-seated inflammatory process.

A rather distinct clinical syndrome encountered in military experience in both World War I and II—the functional bent back, or camptocormia—may be considered a form of hysterical simulation of rheumatism or pure psychogenic rheumatism. In this condition, following some severe pain, occasionally, but not always, related to some mild mechanical trauma, the patient assumes a position of extreme kyphosis. The stooping over may be so severe as to produce extremely bizarre positions. These patients are not malingerers, nor does the motive of separation from military service alone account for the symptomatology. Intense anamnestic study revealed serious maladjustment especially in the sexual sphere. Preoccupation concerning the wife's faithfulness in marriage and conflicts over possible homosexual temptation were very prominent. The symptom was aggravated or ameliorated in accordance with the vicissitudes of military life. Sandler[360] observes that camptocormia is occasionally seen in civilian life following industrial and other types of accidents but that it is frequently unrecognized.

As in other psychosomatic disturbances therapy begins with a thorough anamnesis, particular attention being paid to the setting in which the symptoms appeared. Halliday[347] stresses particularly the importance of disturbed marital relations and the experiences of deprivation, in the form of loss either of a loved person or of material goods. Localization of the symptoms may depend on previous injury or disease, on the nature of the specific psychological conflict, or on the symbolic meaning of the function of certain extremities. The following clinical examples will illustrate:

A young married woman was troubled by pains in her right arm. The ordinary history and physical examination could reveal no basis for this pain. Inquiry into the emotional setting of the pain revealed that the patient experienced this oppressive symptom only when she was irritated by her 5-year-old son and was tempted to strike him. Her wish to strike him made her feel both guilty and inadequate as a mother. Certain experiences of being beaten in her own childhood had led to a resolve never to treat her own children in that way. The pain in the right upper extremity thus served the purpose of inhibiting an impulse to perform a forbidden act.

The readiness with which unhappily married women tend to develop fatigue and musculoskeletal pain is well known to all practitioners. In industrial medical practice psychosomatic pains in and about the joints frequently appear when a worker has been assigned some unpleasant task. Halliday[345] states that it is frequently possible to reduce the meaning of the psychosomatic rheumatic symptom to a very simple statement or attitude. For example, a patient who complains of a stiff neck may be in effect stating, "I am stubborn." A patient who complains of limitation of movement of both hands may be saying, "I am helpless. I cannot raise my hands to help myself." Many symptoms may be reduced to the meaning of "Something is paining me." One must counsel caution and tact in interpreting such a symptom to a patient. The effectiveness of such an interpretation, even when correct, will depend upon proper timing in the psychotherapeutic process.

Since some realistic advantage is achieved frequently through the presence of symptoms, the therapy of psychogenic rheumatism may be rendered rather difficult unless there is a concomitant favorable alteration in the circumstances of the patient's life.

A married woman with two children was extremely unhappy over her husband's occupation. Although he was very capable and well liked, he was unaggressive and relatively unambitious for his family in the pursuit of his occupation. Under the circumstances, the patient felt her housework to be most irksome, for she really desired to go back to business herself in order to augment the family income. During this unhappy period she was depressed, felt continually exhausted and had severe recurrent pains in the small of the back as well as in both shoulders. As a result of a series of fortunate experiences the husband left his old occupation and entered a business for himself. He became extremely enthusiastic about his new enterprise and although he was actually earning less than before, his prospects seemed much brighter. His wife was extremely pleased by the turn of events and interpreted her husband's behavior as indicating a more favorable disposition toward her. Her mood changed; she no longer desired to go to business; she did her household chores happily; and her rheumatic symptoms disappeared.

The following clinical example is almost the converse of the one just cited:

A middle-aged housewife with a history of frank hysteria and periods of severe depression developed extreme pain in both shoulders. This pain was aggravated by any activity. Motion about the shoulders was limited to a few degrees. Her symptoms developed at a time when her husband felt that the family income could be enhanced considerably if his wife did some work at home. Over her protest he arranged to bring some work home for her. On the day that his new regime was to have started, the patient developed her pain. When the plan was given up, the pain promptly disappeared.

Occasionally, the symptoms of psychogenic rheumatism mask a deep-seated psychological problem. Only the controlled observations of psychoanalysis may shed light on the meaning of the symptoms. While the rheumatic symptoms may be most prominent among the complaints which the patient expresses to the physician, they may be relatively insignificant in the light of the total disturbance of the personality.

A 23-year-old single woman sought psychoanalytic treatment as a last resort for relief of severe pain in the arms, shoulders, lower back, and buttocks. She had had these pains for more than six years. During this time this patient had been attended by many physicians and had received various diagnoses and forms of treatments. Exercises for postural correction, local heat, drugs, the wearing of a brace, and the immobilization of the right arm in an airplane splint had been tried at various times, all unsuccessfully. Careful diagnostic studies in an outstanding clinic revealed no evidence of any organic disease. Aside from the fact that she was overweight, there were no physical findings.

The patient was an extremely immature and impulsive character, sadistically oriented toward her environment. She could tolerate very little thwarting of her inordinate narcissistic needs to be loved and admired. The slightest disappointment tended to stimulate feelings of depression against which the patient defended herself by impulsive eating, shopping sprees, pursuit of other pleasures and, on occasions, kleptomania. The patient was a compulsive doubter, almost to a paranoid degree. During periods of impulsive eating she could gain as much as 10 to 15 pounds a week. There were frequent periods of pathological lying.

This patient was the oldest of four daughters. The parents were moderately well-to-do. The mother was overindulgent and overprotective. She was extremely uncertain and vacillating in rearing her children, especially with regard to questions of sex. A notable exception, however, was the training at the toilet which was severe, prolonged, and in many respects perverse. The father was pictured as a cruel, self-centered person who was extremely punitive toward his own children but very passive and lacking in initiative in business. According to the patient he was self-indulgent and sloppy, and although well on in years, was still dependent on his aged father for business guidance and financial support. For years the father had been suffering from vague and undiagnosed rheumatic pain.

This patient presented a profound characterological disturbance. Her symptoms were related to sado-masochistic fantasies of torturing and being tortured by the parents. In many respects in her symptoms she was the replica of her image of her father. The decisive mechanism, common for orally oriented individuals, was an identification with the father which took the place of an object relation. She resembled him not only in her rheumatic symptoms but also in her passive receptive attitude, in her character traits and personal habits. The pains of psychosomatic rheumatism which brought the patient to treatment represented only one aspect of the pathological identification which the patient had made with her father.

In the course of psychoanalytic treatment undertaken for terrifying attacks of anxiety and a dominant fear that his knees would buckle under, a 36-year-old male developed very severe pain, tenderness, and limitation of motion of the left shoulder joint. His attack of "arthritis" occurred at the point in treatment when the patient's unconscious sexual feelings for the male analyst were being demonstrated to him. The patient denied the presence of these feelings and insisted instead that he was certain he had overheard the analyst speak of the patient to another physician. This projection of feelings of reference is a common defense against unconscious homosexual feelings.

Just prior to the onset of the joint symtoms, the patient had several dreams in which he was either being shot by the captain of his ship or beaten by a taxi driver. Interpretations that these dreams represented an unconscious wish to be assaulted sexually by a man were rejected by patient. The shoulder pain became so severe that movement, and at times even breathing, became difficult. The patient consulted a physician friend, asking that he give him a "shot" of novocain into the painful area. This measure brought no relief, nor did deep x-ray therapy.

In the meantime the analytic treatment was continued until the following fantasy was revealed: the patient was certain that his joint pains were due to a draft from the analyst's electric fan to which he had been exposed six months earlier. The joint symptoms, therefore, represented a projection of the patient's feelings toward his analyst with the characteristic inversion of attitude, namely, "It is not I who love the analyst, but it is he who wishes to harm me." This interpretation was followed by a complete relief of symptoms within twenty-four hours.

It is necessary to make two observations on the illustration just cited; first, that the difficulty which the patient developed in relation to his therapist can and does occur in relation to other individuals in the patient's life, both before and during such treatment; and, second, while it is probable that in the absence of any therapy these symptoms might have abated and disappeared, the pathological emotional conflict would have demonstrated itself in some other aspect of the patient's life or physical functioning.

Therapeutic Considerations: It is apparent that the therapy of psychosomatic rheumatism depends first and foremost upon proper diagnosis and accurate evaluation of the symptoms. Where there is a simple situational conflict, a superficial interpretation or manipulation of the environment may prove highly effective, especially if the patient is given the opportunity to express undischarged emotions. Where a direct relation between the emotional setting and the rheumatic symptoms cannot be established clearly and definitely, more intense psychotherapeutic investigation will be needed. In contradistinction to the first group, this latter category requires trained psychiatric handling.

Fibrositis

Fibrositis is a nonarticular form of rheumatism characterized by a nonsuppurative inflammation of the fibrous connective tissue. A similar peri- or interstitial neuritis may coexist. This process may affect the subcutaneous tissues, nerves, muscle sheaths, ligaments, capsules of joints, various fasciae, muscle insertions, tendon sheaths, and bursae. The illness is characterized by: (1) Pain on stretching or on pressure of the affected area. (2) Stiffness. This is most marked at the beginning of a movement and tends to disappear or decrease with the continuation of the movement. (3) Nodules and thickenings. These may be tender in the acute stage or painless in inactive or old cases. Nodules and thickenings are not always found because they may be too small or may have subsided spontaneously. A certain diagnosis can, of course, be established by biopsy but this is rarely done. Differential diagnosis must be considered in relation to the particular area of the body involved. Observers who suggest that a psychological approach be included in all routine medical examinations, stress particularly the need for this form of approach in fibrositis. When nodules are absent, psychological investigation may point the way to a diagnosis of hysteria, chronic anxiety state, or depression. If nodules are present, supplementary psychological examination may indicate very clearly how the rheumatic affliction emerged during a period of intense emotional stress. Observations concerning the life situation during which the symptoms appeared may suggest therapeutic changes in the patient's attitude or adaptation, which may prove as valuable in therapy as routine courses of physiotherapy. Weiss,[247] like Halliday,[344] questions the significance of nodules and other physical findings in relation to the pain in genuine attacks of fibrositis. He observed a series of approximately forty cases in which unexpressed aggression was translated into muscular tension about the shoulder joint or elsewhere. This prolonged muscular tension, he said, produced the phenomena observed in fibrositis. The uniform nature of the psychological conflict in these cases was quite striking. The psychological constellation, however, has been observed in other studies by different authorities.

Treatment of fibrositis ordinarily includes relief of pain by heat, rest, analgesic drugs and applications, and the injection of novocaine. Fibrous areas are cleared up by massage, movement, manipulation, and heat. More specific measures are employed depending on the particular theory of etiology entertained by the particular practitioner. Excellent results in clinical psychotherapy have been reported. Simple measures such as patient listening, encouragement or persuasion directed toward externalizing the suppressed hostility proved remarkably effective in clearing up the symptoms.

The clinical psychological picture of fibrositis does not differ widely, if at all, from that seen in other cases of psychogenic rheumatism. Since the term, fibrositis, is frequently used as a "catch-all" diagnosis where definite criteria are lacking for more precise differentiation, many psychoneurotic entities are frequently misdiagnosed with this term. Occasionally, however, the situation is so complicated that only prolonged and intense observation together with therapeutic trial make the true state of affairs apparent. The following case is illustrative.

A middle-aged housewife was suddenly stricken with intense pain in the left shoulder, which radiated toward the left precordium and down the left arm. The precordial pain subsided after a few days but the articular pain persisted and grew increasingly worse. A diagnosis of acute coronary occlusion was made and the patient was treated accordingly. Subsequent electrocardiographic findings as well as the course of the illness proved the diagnosis to be incorrect. The shoulder pain grew worse. Movement was almost completely limited, and tenderness over the shoulder area was very marked. Neurological examinations ruled out the possibility of infectious radiculitis or cervical rib. After consultation with an orthopedist, a diagnosis of fibrositis of the periarticular structures of the left shoulder joint was made. Apparative manipulation under general anesthesia was suggested. Operation for the liberation of the joint from adhesions was performed under general anesthesia and a full range of motion was restored. The pain in the shoulder persisted, however, for several months.

Prior to the operation clinical note was taken of the patient's querulousness. She took the operation very poorly. The first two days following operation there was evidence of some disorientation as to time and place. It was felt that the patient's complaints were out of all proportion to the physical findings. A definite depressive trend was also noted. Psychiatric examination, as well as the subsequent clinical course, established that the patient was suffering from a rather deep depression characterized by suicidal fantasies. The precordial and articular symptoms appeared in the midst of an emotional disturbance occasioned by certain disappointments in family affairs.

For years prior to the onset of this illness the patient had been suffering from a well-established psychoneurosis of the mixed type with obsessive compulsive features, as well as anxiety and conversion phenomena. She had undergone no fewer than eleven surgical operations, four of which were abdominal. The patient, who had three children, had compulsive acts and obsessive thinking concerning the number, three. Following an accident in which seven children from a childhood charitable institution in which she was interested lost their lives, she developed compulsive acts concerning the number, seven. An interesting feature of the patient's dream life was a recurrent dream of many years' standing to the effect that a cute puppy dog was licking her left shoulder with its tongue. In the dream the sensation was pleasurable.

The patient was treated suggestively with medication and static electricity. She improved rapidly and remained well for a period of seven years. One afternoon she suddenly experienced a burning, tearing sensation beginning in the left flank and radiating down toward the inguinal area, as well as the external iliac area. Since the patient had previously had a nephrotomy, cystoscopy and pyelography were performed. These were entirely negative, as was the examination of the urine. The pain grew more severe and was not abated by the administration of large doses of narcotics. Because of the lancinating character of the pain, a diagnosis of posterior root inflammation was made. The neurological examination, however, was entirely negative.

In the meantime, the patient developed an aversion for all meat, as well as a sensation of a lump in her throat. On the basis of the previous experience with the left shoulder joint, it was suggested that the patient might be entering another depression with the left flank pain acting as the analogy of the previously diagnosed fibrositis. Psychological investigation revealed that the patient was very much disappointed in an older brother who was about to remarry, less than eight months following the death of his first wife, a wife to whom he had been married for over forty years. The patient had, in fact, mourned for her sister-in-law more than her brother had. This was in keeping with the masochistic character formation of the patient. During this period the patient reported a recurrence of the dreams in which her joint was being licked by a dog. Two days later, severe pains appeared in the left shoulder joint. The patient began to complain of anxiety and feelings of depression. Suggestive therapy was tried once again. The patient was given a very bitter-tasting medicine. When she took the first dose she had an attack of intense anxiety and telephoned her daughter to come quickly because she was certain she was dying. The attack wore off before the daughter arrived. Subsequent doses did not produce such a startling effect. The patient's pain and depression disappeared within one week after medication was begun. The dramatic sequence of events in this case history in no sense invalidates the earlier diagnosis of fibrositis. The problem of pathogenesis in this case, as in other cases, involves methodological difficulties which as yet have not been overcome. In most instances, after a proper evaluation of the patient's emotional status, proper psychological methods of therapy prove extremely effective.

Infectious Arthritis

The role which emotional factors play in cases of infectious arthritis is relatively minor because in this connection bacterial infection and sensitization to bacterial protein are of decisive importance. It is a fact, nevertheless, that exposure to such infection may be sought by the patient unconsciously out of some deep-seated psychological difficulty. Whether such cases are actually infrequent or have not been sufficiently reported up to the present time it is difficult to say. In cases of repeated infection, especially gonorrheal, one should consider the possibility that the patient may be suffering from a deeper psychological conflict than is at first apparent. Inquiry as to the point of contraction of the infection with special reference to the problem of why precautions were not adequately observed, may on occasion lead the physician to relevant material that might have bearing upon the repeated exacerbation of a specifically inflamed joint.

Traumatic Synovitis

The cases mentioned in the previous paragraphs are obviously psychologically closely related to individuals suffering from the so-called "fracture habit." In particular, they resemble that group of habitual fracture patients to whom an accident may represent an evasion of an unpleasant situation, a form of self-punishment, or some unconscious perverse sexual wish. Frequently the patient has foreknowledge of the exact mechanism by which his injury may be repeated. This is especially true in cases of traumatic synovitis (synovial effusion) or "locked joint." Psychological investigations of repeated attacks of these illnesses may reveal that the accident was convenient or in some measure self-induced. The situational background against which the accident occurred and the particular thoughts which the patient had at the moment of injury may be very revealing. The following two cases will illustrate some of the attitudes or situations which may be involved:

Case I.—A middle-aged man was consistently avoiding discussion of his unresolved marital status. Efforts of the physician to make him face the problem were to no avail. When the analyst became too persistent the patient would find some means of staying away from treatment. The patient had a dream concerning a friend of his who was in a difficult situation at the firing line. His friend shot himself in the leg in order to be relieved of his military service.

The following week the patient informed his physician that he could not attend further psychotherapeutic sessions because he had injured his knee. When treatment was resumed the situation was discussed. It was pointed out that the patient had, in effect, predicted his accident in the dream concerning his friend. Analysis of the incident revealed that the patient had been a star athlete in college. He had sustained a traumatic synovitis during a football game and had been told to avoid certain stresses and strains.

The evening before the current so-called "accident" which produced the traumatic synovitis, the patient had, for the first time in ten years, danced for three hours consecutively, doing trick dance steps with professional acrobatic dancers during which time his knee had been repeatedly traumatized.

Case II.—A modest and extremely moral housewife was surprised in the course of psychoanalytic therapy for hysteria to discover that she was developing tender and sensuous feelings about her physician. She condemned such behavior, especially since her mother was rumored to have had sexual relations with a local storekeeper. On one occasion when the mother was leaving the storekeeper, she tripped and developed a traumatic synovitis. (The patient, incidentally, continued to frequent the same storekeeper's shop, even though she was married and had moved out of the neighborhood.) One morning while dressing, preparatory to leaving for her psychotherapeutic session, the patient noticed that she was making special efforts to appear attractive. On the way to the subway station she had a fantasy that as she stepped into the analyst's office, he would be smitten by her beauty and become sexually aroused. At that moment the patient tripped and injured her knee. She sustained a traumatic synovial effusion which required almost a month's immobilization. Significantly enough, the patient had tripped three or four times in the two weeks prior to the accident but had felt that these events merited no special consideration.

The accident served many purposes. First, it prevented her from attending the psychotherapeutic session where she would have had to reveal these very embarrassing fantasies. Second, the accident gratified her need for punishment for forbidden sexual fantasies, and third, the accident fulfilled in a rather perverse way the patient's wish to be like and behave like her mother.

Where there have been repeated accidents, psychological investigation should be not restricted to the occurrence of the accident but should also include considerable of the particular part of the body injured. This is especially true where injury tends to be repeated in precisely the same area.

Gout

Arthritis in the course of gout is but one manifestation of a systemic disorder of purine metabolism. McGregor[353] points out that emotional conflicts produce disturbances of endocrine balance and cause dysfunction of the vegetative system. He feels that emotions are the prime disturbers of sugar, calcium and mineral distribution, of fluid retention and excretion, and of blood circulation. In this connection he points out that gout is the classic metabolic arthritis and that it has been known for many years that mental irritation may cause joint disturbances in this illness. Although these diseases are relatively less frequent today, several observations have been made on the personality structure of the patient suffering from gout. The patient is likely to be extremely self-indulgent both with regard to dietary indiscretion and emotional outbursts. During the medical therapy period, the physician's instructions are very frequently disregarded because of the patient's inability to restrain his need for dietary and emotional gratification.

Psychologically these patients have been described as oral-aggressive characters. If emotional disturbances become excessive, aggression is very frequently turned upon the patient himself, resulting occasionally in exacerbation of joint pains, and on other occasions, in depression and brooding. In addition to dietary correction, protracted cases of gout should have the benefit of some form of psychotherapy.

Rheumatoid Arthritis

Rheumatoid arthritis is a chronic disease characterized by exacerbations and remissions. It affects the joints as well as the peripheral nerves and the muscles. It leads to severe disability and crippling. The etiology is, at present, unknown. The course is progressive and no specific therapeutic approach to the disease has been widely accepted. Women are affected more commonly than men in a ratio of three or four to one. In 80 per cent of these cases the illness starts before the age of 40 years. The group most commonly affected is that between 20 and 40 years of age. Remission of the disease process during pregnancy and exacerbations shortly after parturition are frequent.

Pathological changes in the joint vary depending on the duration and the severity of the disease. Especially in the early phases, rheumatoid arthritis resembles an infectious disease. Diagnostic differentiation from arthritis because of rheumatic fever may be difficult. Rheumatic arthritis, however, responds to salicylates and tends to be a self-limited process. The later course of rheumatoid arthritis is characterized by degenerative changes.

Many theories are held concerning the etiology of rheumatoid arthritis but none is regarded as definitive. Infectious, metabolic, endocrinological, nutritional and cytotoxic factors have been investigated but evaluation of these elements is beyond the scope of the present work. Most observers agree that emotions play some role in this disease. Precisely how this factor operates is unclear.

A great deal has been written concerning the psychosomatic implications of rheumatoid arthritis. On a few points there is some general agreement, "that mental shock, continuous anxiety and worry may determine the onset or provoke an exacerbation of rheumatoid arthritis is beyond question." Thomas,[362] Nissen and Spencer,[355] McGregor,[353] Cobb, Bauer, and Whiting[332] and others have demonstrated the close temporal relationship which exists between life's stresses and the exacerbations of rheumatoid arthritis. Grief, poverty, injury, disappointment over loss of love, separation from familiar scenes and persons, were the most persistent and dominating experiences encountered. Thomas called attention to one group of patients who developed rheumatoid arthritis within six to eight weeks following the onset of a depression. The depressions were related to some dramatic turn in the life of the patient.

The second point upon which most authorities are agreed is the importance of the individual constitution as well as the environmental strain. Some maintain that the patient who is prone to develop rheumatoid arthritis under emotional stress is constitutionally inadequate in the biological sense. In support of this view, they cite evidence of vasomotor and vegetative disturbances. More recently the trend has been to view the personality constitution of the patient with rheumatoid arthritis as that of the psychoneurotic. Symptoms of anxiety, hysteria, obsessions and compulsions, psychosexual immaturity, and masochistic character trends long antedating the onset of the arthritic illness is the rule rather than the exception.

A personality profile worked out by Dunbar[5] presented the following features: The onset of the illness was usually related to some loss of security and the illness was used as a means of getting out of responsibility. The patients seemed to enjoy martyrizing themselves, often neglecting their care for that purpose. During illness, the patients attempted to escape reality by daydreams and fantasies. Neurotic traits such as anxiety states and nightmares were prominent. Statistically this group showed a relatively high percentage of divorces. Booth[328] and Stein Lewinson, quoted by Booth, used projective methods. Their concept of an arthritis personality is that of a weak person who overtaxes his inadequate amount of aggressive energy, who has a low emotional threshold, is oversensitive and becomes involved in conflicts between a strong desire for protection and an impulsive need to assert independence of the emotional involvement which the tendency demands.

Assuming that the emotional conflicts must express themselves through alterations of the physiologic status of the organism, several investigators have undertaken to estimate these responses. Burt, Gordon, and Brown[331] concluded that these patients possess the irritable and unfavorable autonomic nervous system characteristic of psychoneurotics in general. Characteristic changes in skin temperature responses and disturbances of capillary flow, presumably on a vasomotor basis, have been demonstrated. For the most part these observations are very suggestive, but as yet inconclusive. The inadequacy of the vasomotor responses of the patient with rheumatoid arthritis has, however, been widely corroborated. Note must also be made of the correlation between disturbances of the diencephalic area of the brain and the onset of rheumatoid arthritis. In addition, features suggestive of parkinsonism have been observed in a certain percentage of patients with rheumatoid arthritis. No evidence exists, however, for the localization of an arthritogenic center in the brain. In summary, it may be stated that emotional forces may set up a chain of physiological events in the vasomotor, vegetative, and muscular conditions, which may indirectly predispose the individual who is susceptible to the development of this disease. Only further research along all the lines suggested can clarify this situation.

The following case history is cited to demonstrate in some detail the personality structure, the emotional symptoms, and the psychotherapeutic approach to the patient who suffers from rheumatoid arthritis. This case may be considered as typical. Observations were made of the patient over a considerable period of time from the psychoanalytic point of view.

The patient was a 55-year-old white female who was admitted to the Presbyterian Hospital during her third attack of chronic rheumatoid arthritis.

Her first attack had taken place eight years earlier under the following circumstances: The patient was holding a very important executive position in the West in a nationwide organization. She was continuing, mostly by mail, a hopeless love affair with a man in the East. This man was married and held a respectable position in his community. He was, in fact, a "pillar of society." One day, without any premonition, the patient received a letter from him to the effect that their relationship must terminate immediately and irrevocably. The letter contained no explanation for his sudden decision. In response to her one letter requesting some explanation, the patient received a package of her former letters readdressed to her in the handwriting of her lover's wife. She became severely depressed at this turn of events. Four weeks later, she was aware of pains in her fingers and at the end of six weeks, she had a full-blown case of rheumatoid arthritis.

The patient is the fourth of five children, and for a period of ten years had been the youngest child and the only girl. During this time she was pampered by her older brothers and idolized by her father. The patient recalled him as a gentle and loving person, completely devoted to his family. The relationship between the two was extremely close. Her mother, on the other hand, was remembered as a vain, egocentric, vindicative, and frigid woman who had little love for her husband, despised a woman's role in sex, and taught her daughters to do likewise.

When the patient was twelve years old, her father became depressed following the death of the paternal grandmother. He was ill for six months, refusing to leave the house. As a therapeutic measure and against his will, he was urged to go on a hunting trip. The day that he was to start on this trip, he shot and killed himself. The patient never ceased grieving for her father. She believed throughout her life in the existence of a hereafter in which she would be reunited with him. This romantic longing for death and reunion with the father unconsciously dominated the patient's love life.

The first week following the father's death, the patient was inconsolable. One night, however, she had a dream in which she met her father as she was going up the road which led to the main street. He told her something which she did not remember, but following the dream she became reconciled to his death. During the course of psychotherapy, the forgotten dream-speech was recalled. In her dream, the father had said to the patient: "Don't worry, whenever you will be in any trouble, I'll be at your side." Twice in her life when she had been at the point of attempting suicide herself, she had stopped at the very last moment with the feeling that her father was at her side, urging her against the act. She felt that his spirit was actually hovering nearby. These mystic beliefs of the patient were in marked contrast to her excellent scientific training and a genuine gift for handling practical matters.

Her professional life centered about nursing, social work, rehabilitation, and relief. In the earlier years of her professional life, she was almost exclusively preoccupied with child-welfare. During World War I she supervised a large hospital. Following this, she held a responsible post in the American Famine Relief in the Near East, discharging her responsibilities in a manner which brought her universal commendation. Through her personal charm and the respect which she commanded, she was able on several occasions to save the lives of condemned political prisoners. In the course of her profession she traveled a great deal and worked very hard.

In her early twenties, she had a depression lasting several months, following the termination of a hopeless love affair with a married physician who could not free himself from his cruel and frigid wife who did not love him. The description of the wife and many other details tallied with the description of the patient's mother. This man was suffering from tuberculosis of which he died a short time afterward. Before her illness was diagnosed as a depression, the doctors attending the patient thought that she, too, was suffering from tuberculosis. This affair was the prototype of almost all of the patient's love relationships.

In the hospital ward, the patient was very withdrawn, cutting herself off from any relation with the other patients. She was indifferent to the members of the Nursing and Medical Staff. At her own request, she was placed in a corner bed where she turned her back to the world and her face to the wall, retaining a sullen silence. She was observed crying on occasions, but never communicated her thoughts to anyone.

Her first reaction to the psychotherapeutic session was one of indifference and listlessness. She regarded any offer of assistance as an unwanted intrusion on her privacy. She expressed great antagonism and hostility toward the physicians who would not permit their aged and hopeless patients to die. She accepted her illness as a compromise between her unwillingness to live and her inability to kill herself.

In the next phase of the relationship, indifference gave way to suspicion. The patient tested the steadfastness of the therapist to determine whether he had a sincere and genuine interest in her. She was convinced at first, that he would be no different from her other physician friends who failed her when she needed them most. After a period of considerable testing, the patient formed a very strong attachment to the examiner, in the course of which she began to show marked improvement. She became more cheerful and optimistic.

The following was elicited in the therapeutic sessions:

The Wish to Die.—Having failed at her two previous attempts at suicide, the patient welcomed illness as a retreat from a world which was cruel and which had mistreated her. To the patient, death represented entering into a hereafter where she would be reunited with her father and her older brother. This antedated the onset of her rheumatoid arthritis by many years. It was dynamically related to her grief over her father's death. Material elicited demonstrated that many times in her life, the patient had sought death, consciously and unconsciously, in order to attain this hereafter. Even in her present illness, her unwillingness to recover became manifest in many ways. She accepted medication, for example, in a completely passive and disinterested way, opening her mouth for the student nurse to drop a tiny pill into the mouth, instead of taking the pill herself.

In the early weeks of treatment, the patient was usually to be found in the so-called fetal position. It was the opinion of the staff that this position was the result of organic changes leading to contractures. Attempts to straighten out her limbs were given up because of the pains and the muscle resistance which these attempts occasioned.

One day, the problem of the patient's wish to die was being discussed. The patient explained that she felt she had put the cruel and evil world behind her and had withdrawn to the comforting security of the hospital bed.

In the course of this discussion she brought to the attention of the physician an article from a magazine. This was a story written from the point of view and with the poetic imagery of a 4-year-old child. The child had been orphaned at an early age and was being raised by a cruel step-parent. In this article the child described the pleasure of retreating to the friendly darkness at night, to the security of the bed sheets, curling up into the position which she had occupied in the womb, where years before she had known protection and security. The patient identified herself with this little girl in her mood of mourning and longing for death. During this discussion, without being aware of it at all, the patient began to move her extremities without giving any indication of pain. When this was called to the patient's attention, she was overwhelmed with amazement. Immediately thereafter, she was able to extend her legs fully and to move them quite freely. The subsequent history of this symptom is most interesting. Whenever in the course of treatment, the patient felt slighted by the examiner or any of her attendants or relatives, she would regress to this fetal position. Her mood could be diagnosed by the physician on inspection immediately upon entering the ward.

Masochism.—The second phase of the treatment involved consideration of the patient's masochism. The analysis of this aspect of the problem constituted the most difficult and by far the longest part of the treatment. It was necessary to go over with the patient many of the details of her daily life in the hospital to demonstrate to her how she either provoked mistreatment or misconstrued reality in order to impute unfriendly motives to others. In this way, she continually rationalized her indulgence in self-pitying feelings of being abused. It was only after this trend had been repeatedly and persistently analyzed that the patient's willingness to live and her readiness to accept assistance became apparent. The circumstances surrounding the patient's hospitalization afforded her abundant opportunity to provoke situations in which she felt that she was being abused. Her mind dwelt upon these incidents and exaggerated them. In this fashion, she managed to maintain herself in a high pitch of agitation and despair. Once, when she was informed by a member of the house staff that she should prepare to leave the hospital, she felt grievously injured and attempted to commit suicide by jumping out of a window. When she related this incident to the examiner, she stated, "The interne told me about it all so suddenly. It was just as if he gave me a blow on the head." Saying this, she placed her hand on the top of her head and stated, "and the following morning a nodule appeared right here." In her earlier psychotherapeutic sessions, the patient had referred to her nodules as "the bumps and bruises inflicted upon me by a cruel fate." The attempt to discharge the patient from the hospital was associated in her mind with the event of forcing her father out of the house on the hunting trip which ended with his suicide. (This regressive type of identification is one of the essential mechanisms of every depression.)

The deeper dynamic structure of the patient's difficulties involved a regressive debasement of the patient's genitality to sadomasochistic trends, the result of a strong unresolved Oedipus attachment to her father. This trend was critically affected by the death of the patient's father at the time of her puberty, an event which lent a great element of mourning to her psychosexual constitution. Unconscious fantasies of being beaten were very prominent in the patient's dreams. To these trends were connected, neurotic fears of spiders and snakes, and fantasies of being assaulted by drunkards or criminals. In a perverse way, her arthritis and dermatological symptoms served to gratify her strong narcissistic exhibitionistic needs.

Therapeutic Implications.—Unconscious sadomasochistic trends characterize all patients with rheumatoid arthritis. In the course of these trends the patients tend to drive themselves, often in direct disregard of the physician's advice. The illness being used as a further means of gratifying these unconscious perverse wishes, a generous offer of assistance may be rejected by the patient who may express an attitude such as "I don't want to feel indebted to anyone," or "This constitutes an unwarranted interference with my freedom of action." This superficial hostility is of utmost importance to all individuals concerned in the treatment of arthritis, whether by physiotherapy, medication, or psychotherapy. Resisting the provocation of the patient requires utmost tact and patience on the part of the physician, nurse, or therapist.

Because the patient is dominated by intense need to be admired and protected she is easily hurt. Clinically these hurts may range from inferiority feelings to deep depression. Some degree of depression is found in all patients with rheumatoid arthritis and like all depressed individuals they are inordinate in their demands for attention. These demands have to be honored, especially in the early contacts with the patient. Upon this may depend the willingness of the patient to cooperate with any form of therapy.

The physician who is made uncomfortable by emotional outbursts or display of tears will have a difficult time with such patients. They dramatize their illness and love to talk at great length about their physical and psychic hurts. This tendency should be discretely but consistently encouraged. Once a secure relationship has been established, the patient is in a more receptive mood to follow advice and give up her unconscious aim of frustrating therapy.

Skillfully pursued, a detailed anamnestic investigation into the circumstances antedating an exacerbation of rheumatoid arthritis will almost invariably demonstrate some period of intense emotional disturbance, usually involving loss of love of security and prone to lead to lowered self-esteem and depression. Similarly, during the physical examination, mannerisms suggestive either of despair or suppressed tension may be observed. Such attitudes may manifest themselves in the patient's posture or such movements as wringing of the hands, clenching the fist for minutes on end, or carressing the fingers of one hand with the other. In the younger patient the opportunities of discussing sexual conflicts with an understanding adult is greatly appreciated.

Because they suffer from a chronic disease patients with rheumatoid arthritis require generous assurance and encouragement. The elements of despair and depression should always be kept in the foreground of one's thinking about these patients. The patient who gives up hope becomes a very difficult nursing and social problem. Most patients with rheumatoid arthritis could benefit from psychotherapy. The more usual superficial types of therapy may prove quite unavailing because of the character traits discussed at the beginning of this section. In the younger patient who is not embittered and not resigned to chronic illness, the chances for a successful outcome of therapy are much brighter.

CHAPTER IX

CIRCULATORY SYSTEM

Disorders of the cardiovascular system were among the first to be studied psychosomatically. Furthermore, long before physicians accorded them this attention, laymen were aware that emotional factors played a role in such illness: Groddeck,* Ferenczi, Wolfe, Weiss, and many others have commented on organ language; for example, one of them said:

> "In all languages, 'love comes from the heart,' people are 'soft-hearted,' 'warm-hearted,' show 'heartfelt' sympathy, or they are 'heartless,' 'cold-blooded,' or even 'stony-hearted.' The heart may be 'bursting with joy,' grief 'gnaws at the heart,' one may even 'die of a broken heart.' "[374]

Physicians are familiar with similar expressions related to the gastrointestinal system. Von Wyss (1927)[375] said:

> "Psychic processes, especially emotions, have a bodily resonance, and, vice versa, bodily processes have a psychic resonance. In other words, an affect contains not only its psychic experience, but also its motor expression to the outer world, and the resonance in the viscera, which represents a sort of language of the individual to himself. . . . Since circulation is that function, the cessation of which means instantaneous termination of life, the heart has become one of the most important organs of inner expression. It is for this reason that the heart has such close relationships with the emotional life and has become the symbol, which is really individual in the man, the symbol of his virtues and vices."

Commenting on this, Wolfe says[373]:

> "Our constant awareness of these connections may be one reason why the first systematic studies in the psychosomatic

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* Cf., e.g., Groddeck, one of the first physicians to write on psychoanalytic treatment of organic disease and to give particular attention to gastrointestinal and cardiovascular disorders. The substance of his article on this subject (1916), together with additional material, appears in a book entitled *The Unknown Self*, London, 1929, C. D. Daniel Co.

field were made on the cardiovascular system, (for example, Weber's classical work[372]). We are familiar with his finding of the constant inverse relationship between blood-distribution in limbs and body-surface on the one hand, and intestinal organs on the other; i.e., with pleasurable affects there is an increased blood flow to limbs and body surface and a decreased blood flow to the intestines, and, vice versa, with unpleasurable affects." [This might be called the scientific basis for such sayings as Aristophanes', "my heart dropped into my abdomen," or the popular German, "das Herz is mir in die Hosen gefallen." We might also add, "Le coeur a ses raisons que la raison ne connait pas." (Pascal)*] Wolfe continues: "Weber also found that the mere idea of an intended motion caused increased blood flow to the respective limbs; this, however, did not take place in passive movement of the limb if at the same time the idea of motion was prevented. Since the time of Weber's work a wealth of data, both experimental and clinical, has been accumulated concerning psychic influence on heart rate, the various forms of arrhythmia, heart size, electrocardiogram, and the function of the capillaries." "It has become clear, however, that whatever the condition of the heart may be, the affect most closely associated with the heart is anxiety. The heart is the only organ which, diseased, can cause not only pain, but also anxiety. Prof. Braun of Vienna (in 1932) published a book *Herz und Angst*[365] in which he considers the heart the 'specific organ of anxiety' and defends the thesis that anxiety originates from the heart; in other words, is of physiological origin. The evidence adduced and his manner of reasoning, however, contain contradictions, and, as is well known, the anxiety problem is much more complicated than he indicates. Anxiety is the central problem in the neuroses. We may find some day that anxiety is a central problem in neuroses. We may find some day that anxiety is a central problem in organic disease also. The statement often made by patients suffering from anxiety: 'I'd rather be really sick,' means that they would prefer an organic disease to suffering anxiety, and doubtless, organic disease, like neurotic symptom formation, is more often an escape from anxiety than we realize today.

"As to the anxiety problem and the cardiovascular system, there is no doubt that certain cardiac derangements produce anxiety. Almost all unpleasurable sensations arising from the heart are accompanied by anxiety, and there is probably no anxiety so overwhelming as that accompanying an attack of angina pectoris. But on the other hand, anxiety also produces cardiac symptoms. In other words, we are dealing with a typical *vicious circle.* In the case of an incipient angina pectoris this may take some such form as the following: Small incongruencies between cardiac blood demand and supply predispose to apprehensiveness; an incautious remark ('You have high blood-pressure' or the mere mentioning of 'arterio-

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* "The heart has a knowledge beyond our knowing" or "The heart has its reason which the reason cannot comprehend."

> sclerosis') may increase the apprehensiveness to anxiety; actual angiospasm as system of anxiety occurs; the anxiety then seems justified and increases again, and so on and so forth. Of this vicious circle Heyer[368] says: 'To one who knows, it is a gratifying object for the simplest psychotherapeutic measures; to one who does not know or consider these facts, this vicious circle is the crux of fruitless attempts at interrupting it by endless dosages of drugs with symptomatic action.'"

The cogency of this statement made by Heyer has been amply demonstrated in recent studies which are making possible better diagnostic and therapeutic procedure. Alexander, Saul, Miller, Menninger, Deutsch, Weiss, and many others have published research studies on the emotional factors in cardiovascular disease.

An article published in *The American Heart Journal*[369] calls attention to the importance of this problem for the Army. Levy and his associates[369] state that of the first 2,000,000 registrants examined for military service, 1,000,000 were rejected for all causes; one-tenth of those rejected were disqualified because of cardiovascular diseases. "This rate," these authors state, "seemed high for men between 18 and 38 years of age." Hence, a restudy of nearly 5,000 cases of cardiovascular rejection was made. The chief causes for rejection were found to be rheumatic heart disease, hypertension, neurocirculatory asthenia, sinus tachycardia, and congenital heart disease. In conclusion, eight unsolved problems were listed, all involving an interpretation of the significance of the organic findings and history.

At the meeting of the Subcommittee on Cardiovascular Diseases of the National Research Council, at which this plan for re-examination was proposed, the value of more accurate evaluation of the personality of such patients was discussed. Since that time, more and more attention has been directed toward the practical usefulness of the personality profile, and the existing tentative personality profiles for patients suffering from each of these syndromes have been further defined and tested.

A study of a large number of serial admissions to a general hospital of patients suffering from cardiovascular syndromes (the study made at Presbyterian Hospital during the last fifteen years) resulted in the outlining of distinctive personality profiles for patients suffering from coronary disease, anginal syndrome, hypertensive cardiovascular disease, rheumatic disease, and cardiac arrhythmia. Three conclusions resulting from this study may be significant:

1. Patients suffering from any one of these cardiovascular syndromes resemble each other much more closely than they resemble patients suffering from diabetes, gastrointestinal disease, or the accident habit.

2. Each of the cardiovascular syndromes has, nevertheless, a distinctive personality profile, if the finer details are evaluated after the pattern of Martin Hewitt's* formula:

> "If I were in search of a man of whom I knew nothing but that he squinted, bore a birthmark on his right hand, and limped, and I observed a man who answered to the first peculiarity, so far the clue would be trivial, because thousands of men squint. Now, if that man moved and exhibited a birthmark on his right hand, the value of that squint and that mark would increase at once a hundred or thousand fold. Apart they are little, together much. The weight of evidence is not doubled merely; it would be only doubled if half the men who squinted had right-hand birthmarks; whereas the proportion, if it could be ascertained, would be, perhaps, more like one in ten thousand. The two trivialities pointing in the same direction become very strong evidence. And, when the man is seen to walk with a limp, that limp (another triviality) reinforcing the others, it brings the matter to the rank of a practical certainty. The Bertillon system of identification—what it is but a summary of trivialities? Thousands of men are of the same height, thousands of the same length of foot, thousands of the same girth of head—thousands correspond in any separate measurement you may name. It is when the measurements are taken *together* than you have your man identified forever."

3. It will be observed that the personality profiles for sufferers from coronary disease, anginal syndrome, and cardiovascular disease have the greatest number of traits in common, and the fewest contrasts when compared with one another, although they all contrast sharply with the other groups studied. This observation might have been anticipated because medical research has led clinicians to regard these three syndromes as closely related or even manifestations of the same disease process. This would tend to confirm the validity of the concept of the personality profile.

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* Queen, Ellery: Challenge to the Reader; An Anthology, New York, Blue Ribbon Books, 1940. (The Case of Mr. Foggart, by Arthur Morrison.)

Coronary Insufficiency and Anginal Syndrome

Most of the statements made in the introductory paragraphs apply to coronary insufficiency and anginal syndrome. Dunbar[5] gave a statistical review indicating the magnitude of this problem.

"Coronary insufficiency is of course an important entity in our high mortality and disability statistics for cardiovascular disease. On the basis of three sets of statistics, it has been estimated that at least 500,000 attacks of coronary artery insufficiency occur annually in the United States. This is an approximate incidence of one attack per 54 males and 189 females over 40 years of age. Furthermore, it is the one subdivision in the group of cardiovascular diseases that seems to have increased most rapidly in prominence.

"Hedley writes: 'The mortality rate among white persons increased from 36 per 100,000 in 1933 to 84 in 1937, an increase of more than 100 per cent. The mean annual mortality rate from acute coronary insufficiency among white males was 76 per 100,000 population while among white females it was only 37 per 100,000 population, less than half the rate among white males. The mortality rate from this disease among the Negro population was 25 per 100,000 population, while in 1937 it had increased to only 28 per 100,000, and it showed a tendency to fluctuate during the intervening years.*

" 'Furthermore, while acute coronary insufficiency accounts for 26 per cent of the total recorded heart disease mortality in the 50-59 year age period, with each succeeding age decade it is responsible for a smaller percentage of the total mortality from heart disease. In the age group over 80 years of age only 5.5 per cent of the recorded mortality from heart disease was due to this cause.

" 'Recently, Gordon, Bland and White[367], studied the incidence and degree of significant coronary disease among 600 private patients examined post mortem as compared with 2,800 ward patients examined post mortem at the Massachusetts General Hospital from 1925 to 1937. In the age period between 40 and 60 years they found that 24 per cent of the private patients examined post mortem had acute coronary insufficiency or myocardial infarction as compared with 12.2 per cent among ward patients.

" 'In the 35-44 year age period the death rate was highest among professional men (47 per 100,000 persons in that occupational group) and lowest among workers, who had a mean annual occupational-specific mortality rate of only 29 per 100,000).' " *

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* It should be noted that among white persons the mean annual age-specific mortality rate among males was nearly four times as great as that among females in the 40 to 49 year age decade, over three to one in the 50 to 59 year age decade, and over two to one in the 60 to 69 age period. This relationship does not prevail in the Negro population, where the ratios between males and females were more nearly equal in each age group.

Recently other studies have appeared which indicate an increase in the magnitude of the problem but unfortunately do not increase the physician's knowledge of how to cope with it.

The physician interested in the psychosomatic approach to such patients is therefore referred to *Psychosomatic Diagnosis*, Chapter V, Parts 2 and 3. Dunbar concludes:

"1. The patient with anginal syndrome, then, resembles the patient with coronary insufficiency in both his personality structure and his symptom complex. Attention has been called previously to the fact that patients with similar symptomatology in the physiological sphere, no matter what the organic basis or etiology is found to be, tend to resemble each other more closely from the point of view of personality structure than patients with very different physiological disorders.

"2. Like patients with coronary insufficiency, these patients stand out in certain respects from the population as a whole. But they differ from patients with coronary insufficiency mainly in their lesser tendency to complete educational units undertaken, and in their higher general educational average. They are somewhat less likely to undertake responsibility, to have large families.

"3. Although the general profile for this group suggests a certain degree of homogeneity, it is probable that, like the profile of the fracture group, it should be subdivided. Such subdivision if properly worked out might have an important bearing on differential diagnosis and prognosis. The typically extratensive patients seem the most likely to go on to coronary damage. But this may appear true with other personalities also, in cases where channels for release of emotional energy are inadequate.

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* " 'Levy, Bruenn, and Kurtz on the other hand, in a study based on the number of cases of coronary disease found at autopsy among all cases examined post mortem at the Presbyterian Hospital in New York City from 1910 to 1931, found that coronary disease occurred slightly more often among foremen and skilled workers than among other occupational groups, but that, in general, occupation did not appear to play an important role in the occurrence of arterial damage' (Hedley). Our own observations, also on a series of patients at Presbyterian Hospital, are not in accord with this conclusion (see Occupational Chart VI). It is possible that the discrepancy could be accounted for by the fact that so many of the patients with coronary insufficiency work up through the skilled laborer class to the rank of officials, managers, or professionals, and then after the first attack of illness adjust themselves to a lower occupational level rather than give up working entirely. Hence in studying this question it is important to base figures on the occupational level just prior to the onset rather than that in which we find these patients after their first or second attack."

"4. The individual characteristics of patients in this group resemble so closely those of patients with coronary insufficiency that there is little point in listing them in detail. The difference is mainly one of emphasis. It is noteworthy that both anginal syndrome and insufficiency occlusion are found frequently in combination with hypertensive cardiovascular disease. In patients suffering from any combination of these three syndromes there seems to be a greater scattering of emotional energy. The tendency toward passive dependency on the mother seems to be stronger than in patients suffering from anginal syndrome or coronary insufficiency alone.

"5. In any judgment of the role played by these traits in bringing about the illness syndrome, the personality constellation must be carefully evaluated. In general the more these patients diverge from the hypertensive or coronary profile the better the prognosis. Carefully oriented therapy may bring about such a divergence if undertaken at a sufficiently early stage."

Hypertensive Cardiovascular Disease

Patients suffering from hypertensive cardiovascular disease or merely labile blood pressure differ only slightly from patients suffering from anginal and coronary disease.*

SMITHWICK CLASSIFICATIONS	DUNBAR CLASSIFICATIONS
Type 1. Pulse pressure is less than one-half the diastolic pressure.	Type 1. Narrow pulse pressure in which the systolic pressure is not much elevated and does not vary, while the diastolic pressure is elevated and shows a great deal of variation.
Type 2. Pulse pressure is equal to, or up to 19 mm. more than one-half the diastolic level.	Type 2. Systolic and diastolic pressures vary, both up and down, with a more or less constant pulse pressure within the range of Smithwick's Type 2.
Type 3. Pulse pressure is 20 mm. or greater than one-half the diastolic level.	Type 3. With variable systolic pressure without much elevation or change in diastolic pressure.

There are some patients who, if they were seen only in a clinic which was open from 9 to 12, once or twice a week or even every day, might easily be misinterpreted and classified in the wrong group because of the lack of opportunity to determine the variations in their blood pressure. For instance, there are some people who are in a certain kind of emotional state on Tuesdays. Sufferers from migraine usually are worse on Mondays because of week-end troubles. Others are likely to be worse on Tuesdays because, after relaxing over the week-end, they have gone through a tense Monday, perhaps had a fight with the boss, and dread the long week of work ahead.

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* Of course, two or more of these syndromes are often found in combination.

Those who think of hypertension only in terms of organic damage are likely to interpret Type 1 patients as potentially hopeless since the expectation is that their blood pressure will continue to rise until they fit the classification of very high systolic and diastolic pressures which do not vary and cannot be brought down: that is, serious vascular damage. These are the patients in whom Smithwick gets his best operative results. Type 2 is likely to be interpreted as having some organic damage, but not serious because the pulse pressure is usually one-half the diastolic level; and Type 3 may be interpreted as having no organic damage.

For example, a patient, aged 50, if seen in the morning, would be classified as Type 2, and he was so reported by the doctor who had seen him previously. If seen in the evening, unless made angry for the moment, the picture would be very different. Nine out of ten hypertensive patients seen during the last year, if seen only on certain days of the week, or only at the same time each day, would be misclassified.

Smithwick's classifications are in terms of operative risks. But unfortunately in his written statement there is little discussion of the factor of variability over a long period of time under various circumstances.

Ferris, Dunbar and others have noted that, after a sympathectomy, a patient may appear to belong in Smithwick's Type 2 category and yet, after an emotional disturbance or even before and after a therapeutic interview, give readings which would classify him quite differently. A change in behavior pattern may alter the classification without operation; but few of those interested in sympathectomy have experimented with the idea of changing it. The patient's blood pressure may remain about the same whenever one physician examines him, but two other doctors taking his blood pressure at other times may find it to be otherwise.

Another patient, scheduled for operation, is an example. His doctors gave him up because they could not do anything about his hypertension, and his last physician told him that his was a case for management rather than for medication. His previous doctors had not noticed his variations in blood pressure, and they thought that he was "stuck." In spite of his favorable pulse pressure, he was given up, although he improved rapidly with brief psychotherapy.

An Army lieutenant suffering from migraine had been turned down on his first examination for the Army because of his high blood pressure. After a rest his blood pressure came down and when he was re-examined he was seen, not at his worst but at his best. He was accepted. As soon as he was accepted his blood pressure went up and he had a return of his migraine. He would be Type 1 if his diastolic pressure were constant as had been thought, but because of his diastolic variation, he belongs in the Type 3 group. This is not unusual in patients suffering from migraine.

Another illustration is a patient with invariable systolic and diastolic pressure. His personality and his life situation fit the Type 1 pattern and he had had the condition so long that it had become crystallized. It is interesting that his internist was so much impressed by his neurosis that he sent the patient to a psychiatrist and the psychiatrist found him to be a very sick man, with severe organic damage.

The recent literature on this subject is voluminous, and anyone interested in the problem can find references in the Quarterly Cumulative Index and in the *Journal of Psychosomatic Medicine.* I shall call attention to a few of these articles, mainly because their titles have a certain psychological interest. In 1942 Wilfred Dorfman[366] wrote an article, "Hypertension: Can Anything Be Done About It?" This article was introduced by a quotation: "Disease is from of old, and nothing about it has changed. It is we who change as we learn to recognize what was formerly imperceptible." After listing etiological factors and hypotheses, this author states:

> "Reliable sources place the incidence of hypertension due to all these combined factors at 15 per cent, the remaining 85 per cent being accountable to idiopathic or essential hypertension. This figure of 15 per cent is interesting because literature relative to the accident habit ascribes 85 per cent of all accidents (with an error of plus or minus 5) to an x factor."

Dorfman goes on to state: " . . . there may be some predisposition through inheritance, for many hypertensives give a familial history of vascular disease," but he adds: "Osler recognized that the quality of the arterial tissue (vital rubber) may be poor, but he likewise admitted that the wear and tear played a not unimportant role. To attempt to control hypertension through hereditary factors would necessitate birth control, which quite obviously is merely evading the issue."

The role played by heredity can be argued, but heredity cannot be changed by the patient or by his physician. However, susceptibility to illness and resistance to injury from the environment can be modified. Dorfman continues: "That blood pressure and emotional feeling go together requires no scientific explanations." He adds: "The individual mind is charming in its forgetfulness, its irrationality and its inconsistencies." He comments: "Those who are wise won't be too busy, and those who are too busy cannot be wise." He concludes with a timely quotation: "In the last analysis we see only what we are ready to see, what we have been taught to see. We eliminate and ignore everything that is not a part of our prejudices."

These observations are well illustrated in the statement made by Alexander[304]:

> "The cardiac patient again has his own psychology. In the case of hypertension it is repressed hostility which makes the blood pressure fluctuate. These are usually the repressed, overcontrolled natures. Of our many cases, one man was the employee of a big company. The president liked to play golf. The patient's wife liked tennis, and insisted that he play tennis on week-ends. The boss wanted him to play golf. The patient

> would like to say 'The hell with you!' So he said: 'I'll be out at 2:30.' When he leaves he knows what he should have said. He can't say anything, he can't express his anger, he is boiling inside, all the time controlled, and his blood pressure is high. Hypertension patients will not give up easily, they are persistent, but inhibited. They strike terrifically toward the goal, always inhibited to reach it, and remain fastened on the goal."

These statements by Alexander have served often to confirm our impressions of patients with hypertensive cardiovascular disease studied in Presbyterian Hospital over a period of eighteen years. For example, a woman who was extremely ambitious and anxious for advancement was made editor of a trade magazine. In this position she found herself imposed upon by the men who represented the Board, and she was working too long hours. Several times she threatened to leave but was always persuaded to remain. Finally, her request for an assistant was granted, but she was unable to manage the assistant who read beauty magazines while the patient did all the work. The patient was so afraid to reprimand her or to give her orders that she would lie awake all night thinking of what she would like to say to the assistant. But in the morning when she went to the office and saw the other woman she was unable to say anything. Her final solution of the problem was to arrange the office so that she and her assistant sat back to back and it was impossible for her to observe that the assistant was not doing the job.

It is easy to see that this behavior parallels that described by Alexander in connection with the patient whose boss wanted him to play golf. The patient wanted to say "The hell with you," but instead, he said: "I'll be there at 2:30."

In the case of hypertensive cardiovascular disease the psychosomatic approach should include the energy economy of the particular organism in its environmental situation, together with behavioral and somatic symptoms. There should be a study of the minor variations in blood pressure which parallel the minor variations of personality and symptoms found within the general hypertensive group, as well as in any given individual.

There are several variations in blood pressure patterns, even among hypertensives without demonstrable vascular damage. For example: Such patients are confusing both in the variability of their blood pressure readings and also in their response to treatment. Some of them respond to the initial interview by a marked drop in systolic or diastolic pressure or both; others respond with rise in both pressures.

It is interesting that in many medical discussions of hypertension, no distinction is made between the significance of the elevation of diastolic pressure and the elevation of the systolic pressure. Van Dellen and co-workers,[371] write: "It is interesting to note that the life expectancy of the persons with systolic hypertension is of the same order as for those with normal pressure. Diastolic hypertension, on the other hand, carried a much less favorable prognosis. Diastolic hypertension was found in less than one-quarter of the entire group . . . "

Van Dellen stresses the fact that there is frequent relationship of migraine to hypertension, and he believes that many of the severe headaches associated with hypertension may be on an emotional basis rather than due to any abnormality of blood pressure. All varieties of character and neurotic disturbances occur in hypertensive persons, but inhibited aggression seems to bear the most consistent relationship to this symptom, and this well may be one of the important factors initiating the development of the vasomotor disturbances of the primary phase of the disease.

The practicing physician who attempts to deal with the emotional component in such patients should give particular attention to these changes and it is often desirable to bring this to the attention of the patient. Valuable clues may be obtained in diastolic pressure since they often indicate that the patient is having a particularly difficult time in making up his mind to answer a question truthfully.

Even within the coronary group, coronary disease may progress in different ways, as outlined by Levy.[369] The task of the physician interested in psychosomatic medicine is to make a parallel chart which will include both psychic and somatic factors.

Cardiac Arrhythmias and Recurrent Decompensation

Sufferers from cardiac arrhythmia, effort syndrome (soldier's heart), or even recurrent decompensation, on the basis of myocardial damage are likely to appear extremely neurotic. This initial impression may mislead the physician who is unaware of the inverse relationship of psychic and somatic symptoms. He probably will give too little weight to personality factors in patients who are demonstrably ill, and too much weight to the psychic factors in patients whose illness is still in a reversible phase—that is, to the patient who might be discharged with a diagnosis of no demonstrable sign of organic disease. Patients in the latter group often are told that they are "nervous," that their illness "is imaginary," or to "buck up and you will be all right," when actually their illness syndrome, even when the psychic component is the most obvious, may be just as malignant in terms of incapacity, organic damage, or mortality, as a somatic dysfunction which can be more clearly diagnosed.

In spite of the fact that the group designated "cardiac arryhthmias" includes several forms of complaint given different names, the personality traits are remarkably uniform when contrasted with other groups, such as coronary insufficiency or accident proneness. The points in the profile are in more general conformity with the coronary picture than with the picture for fracture, with a single striking exception; that is, they are higher than any other nonfracture group for records of more than one accident, whereas the sufferers from coronary disease have few accidents. This is a valuable clue which should help to distinguish them from those who may be suspected of coronary insufficiency. Other differences are that their work record is somewhat unstable, that they have a confusion about sex, combined with fear and disgust, and that they do not have a high record for marriage and number of children. It will be remembered that those who suffer from coronary insufficiency typically persist in one occupation until they get to the top, almost always marry, have many children and few divorces. While the income and vocational levels of those with cardiac arrhythmias are generally high, their success is achieved more by intermittent brilliance than by hard work. A fundamental difference between the two groups is that the focal conflict of those with cardiac arrhythmia lies in finding themselves or in determining their role in life rather than in conflict with authority, as is the case with those who suffer from coronary insufficiency. They react to this conflict with wavering between a withdrawal from activity and an attempt to be effectual.

Those who are psychoanalytically trained sometimes doubt that psychosomatic profiles can be of much use to the general physician who is not expert in the use of psychotherapy and who may, by the wrong kind of emotional treatment, even contribute to an aggravation of symptoms. The profiles, however, may be exceedingly useful in diagnosis, thus preventing errors which would have serious consequences of another kind, and giving clues to the attending physician by which he may more readily decide when referral to a psychiatrist is desirable. A dramatic case of this kind was that of a woman who was thought to be suffering from a rare organic disease which was expected to have a fatal outcome. When treated psychosomatically, it was diagnosed rather as a case of cardiac arrythmia and the patient returned to active life within a comparatively brief period. The case history follows:

A married woman, aged 28, was admitted to the hospital three times in quick succession with cardiac decompensation on the basis of unknown etiology. At first it was thought that the problem was rheumatic; then gonorrhea was excluded; and then it was decided that she might be suffering from a rare condition known as lupus erythematosus disseminatus. The patient's response to treatment was poor and it looked as if she would have to be kept constantly in bed because of the unfavorable prognosis. During all three hospital admissions she was on the danger list, and part of the time she was in an oxygen tent.

If there were time to present this long case in detail, the enormous amount of hospital time and medical attention devoted to this patient and the thoroughness of the medical follow-up would be impressive. Nevertheless, she was discharged for the third time with cardiac decompensation, etiology unknown.

There was a complete absence from the medical personal history sections of the relevant information which was brought to light when, after the third discharge from the hospital, she sought psychiatric advice.

Many events in this patient's life proved to have a specific relationship to her illness. During childhood she had been exposed to constant conflicts between her parents; her marriage was unhappy and characterized by experiences that produced anger and disgust in her; she entered into a love affair with a married man who was a friend of the family; her relations were poor with both her mother and her mother-in-law, each of whom tried to dominate her life. A telescopic picture will show more clearly how some of these life situations were related to her later illness.

After discovering that she was pregnant, she decided one morning to rearrange her bedroom and, in moving her husband's bed, she strained her back. The pain in her back persisted for several weeks and her physician recommended a lumbosacral fusion and a therapeutic abortion, and he told her that she would have to spend most of a year in bed in the hospital. In relating this to the psychiatrist, she said: "Could it be that I welcomed the idea? I don't believe that I really needed the operation, but I couldn't get divorced and this seemed a heaven-sent opportunity to get away from my husband."

After this, the love affair with the mutual friend began, but it was broken off when the patient spent two months in the country repenting. She made an appointment to see him, however, on her return to town. On the night before the new appointment she was knocked down at a gay party and she thought she had broken a rib. She said that this gave her a great sense of relief because now it would be unnecessary to sleep either with her husband or her lover for quite awhile. Thus, her guilt over a severe conflict was temporarily allayed. But the rib was not broken, although the symptoms continued, and the next day she was sent to the hospital for the first time with cardiac decompensation and pulmonary edema. She said: "I was reading in a book that the Lord strikes knives into the hearts of His children that err, and I guess that was what happened to me."

The patient was in bed for three months. Then she got up for a party which was attended by her lover and his wife. The old conflict returned, and six days later she was admitted to the hospital for the second time.

After the third attack, which came on three months later, she was moved from the hospital by ambulance to her summer home. She remained in bed and the only visitors allowed were her mother and her mother-in-law, the two people of whom she was most afraid. During the fifth week she was allowed to get up for dinner for the first time, and her husband invited his business associate and his wife to join them. This business associate was her lover. The following day the patient wakened gasping for breath, and with a return of her old symptoms. She insisted on seeing her psychiatrist, although her husband and the doctor thought that this was unnecessary because all arrangements had been made for her return to the hospital.

When the psychiatrist arrived, the husband was pacing the floor and the trained nurse asked in agitation whether the patient would live through the night. They said the psychiatrist's visit was useless, inasmuch as the patient could no longer speak.

When the psychiatrist walked into the room the patient opened her eyes, which were full of terror, and said between gasps for breath, "Well, you were almost too late; I am going to die but I wanted so much to wait until you came." She was propped up in bed and her whole body was rigid. In a few moments she said, still in a hoarse whisper: "I wanted to confess; I'm no good; I guess I'm done for." Then, after a pause: "I can't help being attracted to A; I hate my husband; I'm being punished." The following conversation ensued:

Psychiatrist: "I think you are very angry—look at your fists." (Both fists were tightly clenched.)

Patient: "That's the pain—the knife in my heart." Then, after a pause: "You think I want to sock someone; nice girls don't do that." And, for the first time, her face relaxed in a wry smile and, in spite of herself, she took a deeper breath.

Psychiatrist: "What about a long slow breath?" (The patient's pulse rate had gone down from 150 to 90 during the preceding moments.)

Patient: "I couldn't; the pain would be terrible."

Psychiatrist: "You just did, and it didn't hurt, did it?" The patient tried, looked amazed, and began to speak in her normal voice.

Patient: "Do you really think they can do anything for me? They haven't yet."

Psychiatrist: "Perhaps not, but you can."

Patient (in astonishment): "What?"

Psychiatrist: "You might start by unclenching your fists, at least until the right person comes along to sock, and then breathe naturally."

Patient (after a pause): "My toes are all clenched too; I guess I was mad. Why won't the doctors let me see my friends —people I like—instead of keeping me in prison, tied to my bed, to be tortured by my husband, my mother-in-law, and my mother?"

Psychiatrist: "We'll see about changing that tomorrow. Now, what about taking away those pillows and having a good sleep?"

Patient (doubtfully): "I feel better. You don't think I'm no good, the way the others do?"

Psychiatrist: "Quite the contrary. We'll talk about that in the morning."

Patient: "Then I'm not going to die tonight?"

Psychiatrist: "Why should you? Your pulse is normal; you can breathe, and there isn't any more pain, is there?" She sighed deeply and went to sleep almost immediately.

The next morning the patient was so much better that the physician in charge decided that it was unnecessary for her to go to the hospital. Shortly thereafter arrangements were made for her to return to her town apartment where she could have more adequate treatment. In about a month she was able to be up around her house and to care for her child. Four months later she was managing a job, in addition. There have been no further attacks in a period of six years, although no limitation of activity of any kind has been made.

Perhaps the best comment that can be made on this case, from the psychiatric point of view, was made by the patient herself. She said, about her illness: "Until you made me face what was really bothering me, and showed me that I could do something about it, life was impossible except when I was sick. It may sound funny to you, but it used to be a relief to have a real pain to fight, instead of my husband and all the people I hated and whom I felt despised me. What I used to call the knife in my heart hurt so much that it blotted out everything else, everything that bothered me. It was like being drunk, but even more potent."

This patient illustrates both the diagnostic value of the personality profile and the value of psychotherapy in preventing invalidism, as well as possible fatal outcome of illness.

It should be noted that this patient is alive with no restriction of activity and happily remarried more than ten years after the treatment reported took place. Following treatment, she was seen two or three times a year until 1940 and during the last six years she has merely returned for an annual check-up.*

Dr. T. P. Wolfe[373] who was associated with the author's study of the personality profile during its earlier years, made the following statement which includes a very interesting case history:

"In a review of the total cardiac admissions over a period of time, there is perhaps none among the various pictures presented of greater interest than that of recurrent periods of decompensation. We are somewhat familiar with the idea of a psychic factor in hypertension; in exaggerated attacks of dyspnea and palpitation, and even in patients presenting marked precordial pain. For several reasons we are not likely to think of it in connection with cardiac decompensation.

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* For further case material, see Dunbar: *Psychosomatic Diagnosis*, Revised Edition, 1947.

"I should like to illustrate these general remarks with one case history, giving only the relevant facts:

"A married woman of 45 was admitted to the medical wards of Presbyterian Hospital. Her general health was good until 19 years previously. At that time—after a pregnancy which ended in the delivery of a stillborn baby—she was told that she had heart trouble, and from that time on there were frequent episodes of rapid heart and dyspnea, necessitating frequent periods of bed rest and more or less continuous digitalis medication. Five months before admission the patient was awakened one night by her sick daughter (also suffering from cardiac disease); she became excited, frightened, and then she fainted. From that time until admission she was in bed off and on, had a very rapid pulse and an attack of pulmonary edema. In the hospital on bed rest and digitalis, the patient showed rapid improvement, with a decrease in pulse deficit by the third day. She was discharged after three weeks, the diagnosis being: inactive rheumatic heart disease, cardiac insufficiency, chronic auricular fibrillation, chronic cholecystitis. Four weeks later the patient was re-admitted because for the past few days she had become dyspneic and orthopneic. The night before admission she had brought up pink frothy sputum. She was fibrillating rapidly. Again there was rapid improvement and, after ten days, the patient was again discharged. This time, however, the closing note on the chart read as follows:

" 'It has been rather difficult to understand why this patient should have such frequent breaks in cardiac compensation in view of the relatively slight cardiac damage. It was felt by some that there was enough evidence of hyperthyroidism to account for this. On the other hand, her basal metabolic rate fell rapidly to normal on a few days' bed rest. She was seen by a psychiatrist who felt that there was a very definite marital maladjustment and a relation between her cardiac decompensation and emotional trauma. It seems wiser to endeavor to establish this as a definite cause before going ahead with a thyroidectomy.'

"The patient has been seen in the psychiatric clinic about 40 times since her discharge from the hospital and is still being followed. . . . The first relevant fact brought out was the circumstance that her attacks of pulmonary edema which had occurred off and on during the past 11 years, were always precipitated by sexual intercourse. Even at this stage of the treatment it seemed almost certain that the attacks were not precipitated by the physical exertion connected with intercourse; first, the patient could stand a moderate degree of physical exertion without decompensating; second, considerable cardiac discomfort, although not to the extent of pulmonary edema, would occur without any physical exertion, when the patient lay in bed, or even sat, thinking of having intercourse, or when she was sexually aroused.

"The patient, who married at the age of 20, had always been frigid; she had 'suffered agonies' during intercourse and had only one thought during it: if it were only over. She never refused intercourse, however, because she felt that she owed it to her husband with whom she had an excellent relationship in other respects. She tried, however, to avoid it whenever possible; e.g., by staying up late until her husband would have gone to sleep. A counterpart of frigidity in sexual intercourse was a symptom which had started suddenly about 16 years ago, the night of the death of the patient's 8-month-old child. This symptom, which the patient termed 'passionate feelings' —intense genital sensations which would 'drive me crazy'— would start suddenly, without any apparent provocation, last for days or weeks and then disappear for weeks or months at a time. These sensations were not only not relieved by intercourse, but during these periods the patient was even more averse to intercourse than ever. On the occasion of their first occurence she smoked cigarettes incessantly (which she had never done before, and has not done since); later she would try to 'walk it off' by walking 40-50 blocks at a stretch, without obtaining relief. Masturbation she never thought of.

"For almost 20 years the patient had slept very poorly. She would get so restless during the night that she finally 'could no longer stand it in bed' and would get up and do something around the house. It developed that this insomnia—apart from her struggle against sexual relationships—was mainly due to a childhood experience which the patient related with the greatest difficulty. The patient was born in Europe. When she was about six years of age her father left for America and soon afterwards her mother began to carry on sexual relationships with other men. The girl was a witness to this, even to the extent of sleeping in the same room. Through all her life she had not been able to free herself from this experience, had never told anyone about it, and felt even now that it was 'horrible to talk about it.' She said: 'It seems that every time I got sick and a doctor asked me, I could get just to that point and no further.' Practically all her life she had been disturbed by constantly recurring dreams about her mother. When the patient returned for the appointment following the eliciting of this story she related that, for the first time in many years, she had slept through every night.

* * * * *

"From the internist's point of view it is remarkable that the patient, after the preceding interview, had walked the respectable stretch of 67 city blocks without any physical disturbance; whereas shortly before, in the absence of any physical strain, but under emotional strain connected with the bringing up of unconscious material, she had a cardiac attack serious enough to occasion her admittance to the overnight ward. To this remarkable change in physical tolerance there corresponded an equally noteworthy change in the psychic sphere. As far as the transference was concerned, the patient remarked spontaneously: 'Since last week I was not even afraid of seeing you.' At the same time she was much freer in the discussion of her resentment against her mother, and noticed a change in her attitude toward her husband, which greatly surprised her. She said: 'When I came home that day I was so happy, so glad to see my husband, it was as if we had just been married.' She felt more relaxed and no longer dreaded to go to bed; she no longer felt antagonistic about sexual intercourse, and for the first time experienced pleasure in it. She again has the 'passionate feelings' but 'you would not believe it,' the patient said, for the first time they were accompanied by a desire to have intercourse with her husband. She said: 'I feel something is taking shape, I don't know what. Something I'm drifting away from that I was afraid of.' Her husband noticed the change and remarked: "I don't know what's gotten into you!'

"Since then the occasions on which the patient has been frigid in sexual intercourse have become more and more infrequent. She has had no major attacks of palpitation or dyspnea, and no attacks of pulmonary edema, in spite of having increased her physical activities to a considerable degree. 'Hot flashes' and attacks of perspiration, which formerly disturbed the patient a good deal, have entirely disappeared (she has not yet reached the menopause). Cardiac discomfort of a minor degree or disturbances of sleep still occur occasionally, but always in connection with still unresolved emotional problems rather than with physical exertion. She takes long walks and takes care of her household, sometimes with and sometimes without a maid, whereas before she had been unable to attend to anything in her home.

"It is interesting to remember at this point that two surgical operations had been contemplated in this patient; thyroidectomy and cholecystectomy. Thyroid surgeons come more and more to consider patients who are considerably afraid of an operation as poor operative risks. The patient reported was considerably frightened by the prospect of an operation; in addition, her heart condition in itself affected the prognosis unfavorably. Of a cholecystectomy the patient was particularly afraid as her mother had died following a cholecystectomy, and a brother following an appendectomy. The situation is all the more important as the patient's gall bladder symptoms were to a large extent, if not completely, based on an identification with her mother. (There was no definite clinical or roentgenological evidence of gall bladder pathology; on the other hand, her mother's gall bladder attacks had made a deep impression on the patient, and her gall bladder symptoms cleared up to a far-reaching extent during the course of psychotherapeutic treatment). It is a gratifying experience for the psychotherapist to be able to spare a patient the necessity of surgical intervention, particularly if this intervention is much dreaded and, partly because of this dread, dangerous."

This case is cited not because it presents anything extraordinary from either the somatic or the psychic side, but because it illustrates certain aspects of cardiac patients in general and of the patient with organic heart disease complicated by psychic factors in particular.

Very frequently—and we must say unfortunately—these patients seem to be well adjusted; i.e., by no means obviously neurotic. In the patient reported, the thought of a complicating psychic factor was arrived at only by negative evidence; i.e., when it was felt that the degree of organic damage did not account for the seriousness of the clinical picture. Cases like this indicate again and again that *no degree of organic damage should blind us to the presence of complicating psychic factors.* This is all the more important because—particularly in the case of serious organic heart disease—the psychic factors may determine the course of the illness and even a fatal outcome. In the patient reported, the organic findings and the medical regime are the same as nearly two years ago, when the patient was first seen, yet the clinical picture is markedly different, as a result of the partial elimination of complicating psychic factors.

This case history, together with Wolfe's comments on it are given at length because they call attention to a fact frequently overlooked in both civilian and military practice; namely, that removal of the psychic component in the illness syndrome may save the physician, the patient, and the community the expense of costly procedures which may be unnecessary if the illness is correctly evaluated on the basis of an adequate psychosomatic study.

CONCLUSION

Although a general approach to treatment of patients with diseases of the circulatory system has been indicated in each section of this chapter, the fact should be stressed that in spite of personality resemblances, the four groups demand slightly different management. All require careful study and much patience on the part of the physician if an unfortunate outcome is to be avoided. Too often, a physician becomes discouraged and a discouraged physician who perhaps thinks of his patient as someone with a few months or years to live is not a good physician for such patients. This is true whether or not he tells them the worst, whether he pulls his punches or whether he pats them on the back.

CHAPTER X

RESPIRATORY SYSTEM

Although dysfunction in any organ system may be produced by an outside agent or an "infection," the majority of respiratory disturbances are occasioned or complicated by external organisms. Discussion of minor respiratory ailments such as the common cold, will be left for the chapter on infectious diseases. This chapter will be devoted to four major disorders: tuberculosis, hay fever, bronchial asthma, and bronchitis.

Tuberculosis

Review of Literature.—An excellent review of contributions toward the psychosomatic study of tuberculosis has been published by Merrill.[390] Physicians have long been aware that tuberculosis is likely to run in families and even that a certain type of person seems particularly likely to develop tuberculosis. Until recently, however, no serious attempt has been made to outline a personality profile. The first approach to control of tuberculosis was by improving housing conditions and milk supply. Day,[381] working in England, calls attention to the large group who have not been subjected to the stress and strains classically held responsible for tuberculosis—"malnutrition, overcrowding, bad working conditions, or exposure. By this standard there appears to be no excuse for their breakdown. Then why do they break down? Obviously because they have become infected by the tubercle bacillus (as we all do): but for some reasons their tissues are in a condition to give it a good home instead of destroying it or imprisoning it for life. Is it just by chance that their tissues are so hospitable?" The personality picture developed is strikingly similar to that worked out by the author, which will be outlined later.

Friedman, Kastlin, and Kooperstein[384] after commenting on the relative lack of psychosomatic studies in this field have analyzed family and personality data for one hundred consecutive Army cases, more than 75 per cent of whose parents were native born, and concludes that "there are indications of a personality pattern." Their observations are also in general accord with those made by Day and the author.

Bibliographies including reference to other studies will be found in Day,[381] Dunbar,[3] and Merrill.[390]

Because of the remarkable progress in early diagnosis and therapy, tuberculosis has lost much of its terror. To the lay mind, however, the disease is still, to a large extent, what it was in reality only a few decades ago. Much has been written concerning the interrelationship of psyche and soma in tuberculosis. Many authors have considered a specific toxin to be the cause of typical change in the personality structure. Others have believed that certain personality types may be predisposed to tuberculosis. It becomes increasingly well recognized that there is an emotional component which does play an important part in the course of the disease. As early as 1919, Tohru Ishigami[387] studied the influence of psychic factors on the progress of tuberculosis. Among other signs, he investigated the fluctuation of the opsonic index. He was able to show that emotional conflicts lowered the index and postponed its return to normal. He stated that emotional factors, because of this and other changes in the body physiology, predispose the organism to tuberculosis as well as to other infectious diseases.

About the same time, S. E. Jelliffe and E. Evans[388] reported on several patients with tuberculosis who had undergone psychoanalysis.

In 1933, M. B. Eyre[382] made a study of the role of emotions in tuberculosis. Some interesting ideas were advanced, among which the concept of the unity of mind and body is probably the most important. Eyre further pointed out that energy consumed in emotional conflict is lost to other bodily functions. She also stated that tuberculosis is particularly fitted to foster emotional stress by its long duration, disturbance of social relationships, financial burden, segregation. The personality make-up of these patients could not be explained on the basis of any toxic reaction.

J. Hartz[386] investigated the relationship of tuberculosis and personality conflicts. After having been a patient for a year, he was able to be in attendance as a physician and do some routine work as well as serve as psychiatric assistant in both the sanitarium and the nearby village. He was thus able to see something of both sides of a complex problem. It soon became apparent to him that deep-seated psychological factors play a very important part in the problem of relapse, or as later appeared likely, even in the original development of the disease. "As I grew to know my cottage mates intimately, I became aware that many had a second history inside them, beyond that which they had told the doctor on admission. This second history was usually the story of how they had been living when the disease, or relapse of the disease, appeared. In tuberculosis this is extremely significant, for the balance between being well and being ill is sometimes influenced by subtle factors of strain or fatigue." Hartz points out that emotional reactions to certain life situations may be such as to interfere with healthy living. These reactions may thus become most significant in the onset and course of clinical tuberculosis. Concluding his paper, he says that in terms of practical management, pulmonary tuberculosis can be as much a disease of the personality as it is of the lungs.

The knowledge that tuberculosis is to some degree a psychosomatic problem is becoming increasingly evident. As yet no specific interrelationship has been formulated but there can be little doubt that in some cases the personality make-up of the patient plays a considerable role in the etiology and course of the disease. Since modern case-finding programs make it possible to reach the patient in the beginning of his disease, research is in a position to study the psychic structure before the prolonged course and treatment have left their imprint in the form of pathoneurosis. It will remain the task of these investigators to determine whether there is any specific personality type more prone to contraction of tuberculosis than others and if so, to discover what their interrelationship might be.

Friedman, Kastlin, and Kooperstein,[384] in attempting to sketch a personality profile for tuberculous patients followed somewhat closely the personality profile outlined in *Psychosomatic Diagnosis.*[*] Their statistical data differ from the author's own data only to the extent which might be expected because of the nature of the group they studied. Their major statements may be summarized as follows:

> "*Family Data:* 60 per cent of the parents of these patients were in a rural environment; 60 per cent of fathers, 80 per cent of the mothers were living; causes of death were diverse—heart trouble, and accident ranking first; only 4 per cent of fathers and 3 per cent of mothers died of tuberculosis."

This material should be contrasted with the family data given in Chapter IX. The majority of the parents were in excellent health, and those with poor health complained of a great variety of minor symptoms. The previous *health record* of the patients themselves was equally good. They reported few *operations* although appendectomy was fairly frequent, being 16 per cent, which is in accordance with the author's observations. The number of *civilian injuries,* however, indicated that accident proneness (53 of relatively major importance in a group of 100 patients) should be considered, and it is possible that had minor injuries been included, the number of injuries would have indicated an accident habit pattern. *Occupational distribution* of these patients was diverse, as was that of their parents. Their *hobbies* were varied with emphasis on sports, including fishing and hunting. *Neurotic traits* were negligible, except for obsessive-compulsive traits. *The general behavior pattern* indicated "independence and efficiency which made them normally or better than normally adjusted in their economic, sexual and social spheres." They showed some resentment toward authority. The author has the same impression, but would like to stress as did Merrill[390] that "these patients have a strong infantile need to be the passive recipients of affection and reaction formation to this takes the form of narcissistic and obsessional-compulsive character traits." This is an outstanding characteristic of the tuberculous patient and although it may be aggravated by the illness, it is found in the childhood history as well. It is a behavioral pattern that constitutes a major problem in treatment. Many anomalous reactions to psychotherapy as well as to operative procedures or streptomycin are influenced by this element in the patient's personality, and are often decreased or eliminated by adequate attention toward its relief.

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[*] **Dunbar:** *Psychosomatic Diagnosis,* New York, 1939, Paul B. Hoeber, Inc. pp. 581-593.

ILLUSTRATIVE CASE HISTORIES

Case D-10, married, white, female, aged 30, with two children, aged 11 and 13, was referred to the author by a physician who had treated her in intervals of three years during her stay in a sanatorium. He states that at the time he first saw her she was profoundly upset, tearful and pessimistic. The patient reported later that she was obsessed with ideas of suicide as the only escape.

The referring physician described her general problem to be her inability to accept her passive role, to lie back and be cared for. He found her an aggressive, masculine personality and added that her mother and maternal grandmother had been of the same type. Her father was in a mental hospital. Treatment was directed mainly toward untangling her feelings about her mother's coldness and hostility. She improved rapidly and was permitted to leave the institution provided she make arrangements for extramural treatment.

The patient's tuberculosis was getting worse, and she seemed dissatisfied, unhappy and restless. At that time she had moderately advanced disease on the right, with cavity and endobronchial disease. A phrenic crush had been of no avail; pneumothorax could not be attempted because of the bronchial disease; and the whole process was advancing and too active for thoracoplasty.

In brief summary, the patient's story was as follows: early rebellion against her mother's rigid standards and hatred of her father's inadequacy, although she was inclined to place the blame for this on what her mother had done to him; adolescent sexual aberrations, combined with an inability to make up her mind to marry. Histories with a similar focus were reported by Day.[381] Not infrequently such patients will go to the extent of bearing children out of wedlock rather than become tied to a man. As they come to understand their behavior and to recognize their insistence on independence as a cover-up for their anger about early deprivations, they tend to improve. A problem frequently encountered is, that at this stage they feel the full force of their desire to be taken care of and infantile behavior is to be expected. They are so afraid of their passive longings that they may again revert to self-destructive acts such as exposing themselves unnecessarily to infection, neglect of rest and personal hygiene, or even wishing to stop treatment. Not infrequently, they become accident-prone temporarily.*

Dr. Macgruder working with the author gives the following excerpt from the preliminary history of a patient treated by her:

CASE M-1, married housewife, white, aged 38, was admitted to Presbyterian Hospital in September, 1946, for special treatment in the equalizing pressure chamber, for pulmonary tuberculosis.

The patient has been a moderate diabetic since 1932. Her maternal grandfather died of diabetes and her brother is at present a diabetic. The patient had a three-day coma eight years ago, during a spontaneous pneumothorax episode. Since 1938, the patient has not watched her diet, only avoiding food high in CHO. She has been taking 9½ units of regular insulin each evening plus 38 units of P.Z.I. in the morning. She occasionally spills a one-plus sugar. Blood sugar level of 260 is highest known.

Pulmonary tuberculosis was diagnosed in October, 1934, when an x-ray was taken after sinus treatments failed to cure a cough. She had scant weight loss. Disease was said to be in right apex. She remained at home on bed rest. Pneumothorax was induced satisfactorily in October, 1935. Disease was also found on the left in October, 1935, and pneumothorax was given on the left, also.

In 1944, having been well since 1939, she had new disease, discovered by x-ray. She had been tired, and had lost more weight. In December, 1944, she had hemoptysis from the left, where a cavity was seen on x-ray. She had only home bed rest. Attempt to collapse left lung failed in August, 1945. Phrenic crush in January, 1946, failed to produce the desired result.

On her admission to this hospital, the x-ray showed bilateral pulmonary tuberculosis, with a cavity 3 x 4 cm. in the left apex. She has been in the equalizing pressure chamber since September 12, 1946, and is to remain there four months in all. She stays in the chamber ten hours a day, from 9 A. M. to 9 P. M. with two hours out for lunch and supper. She completely suppresses intercostal and diaphragmatic respiration; the pressure in the chamber forces the air down into the bronchial tree.

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* Ibid., Chapter XIII.

The patient is described by an attending physician as a "negative" person. She doesn't regard this illness as a recurrence of her tuberculosis, but rather an illness caused by conflicts with her mother-in-law. There is much "strife" in this relationship. The husband is apparently dominated by his mother. The husband is a very meticulous person. He also fusses around the patient a great deal at home and when he visits her in the hospital, it is "darling this" and "darling that" all the time. When the patient is away from home she writes to her husband as if she weren't married to him. Her husband told her to be a good girl while she is in the hospital, or he won't marry her when she returns home. The husband suggested to the attending physician that he (the doctor) should take care of the tuberculosis and that he (the husband) would take care of the diabetes. The patient is glad to see her husband on his visits to the hospital, but she doesn't want him to remain. They live in Detroit. He plans to visit her on Thanksgiving, and the patient stated that she wanted to see him Thursday but not on Friday. The physician states that she talks more about her cat than she does about her husband, stating "it's the cat first, and then the husband."

The patient has no children of her own. She said that she felt that diabetes was hereditary and didn't want to pass it on to her children. She and her husband have taken a little boy, age 10, whom they clothe and send to school. They live in a two-family house. The mother lives elsewhere.

The patient has no complaints about the treatment in the chamber. She just lies there for ten hours a day on her back, eyes closed most of the time. She cannot read, write, or listen to the radio while in the chamber and she can only converse with people through a loud speaker and that for only a minute at a time. She complains very occasionally that the meals are cold or that the nurses don't know how to give insulin shots. She has never complained about the doctors. After being in the chamber for about two months, she began to spruce up and take more notice of her personal appearance. She fixed her hair and started using rouge, powder, and lipstick. At night when she is taken out of the chamber for the night she reads pulp magazines.

It is unnecessary to point out the many ways in which Case M-1 resembles Case D-10.

D-11, unmarried, white, male, aged 40, who had spent time in a sanatorium for tuberculosis and had left contrary to advice, requested psychiatric help.

This patient's major problem was his mother who was a dominating woman and kept getting between him and his father. When he was bad and went to his father for help she always succeeded in getting his father on her side. He felt that she had made his father's life unhappy.

He had an excellent previous health record as is usually reported by these patients, combined with great ambition and a tendency to accept nothing from anyone. There were no outstanding neurotic traits except compulsive behavior, a tendency to depression, and a sexual obsession. He had had many affairs but had been unable to make up his mind to marry. He had always felt slightly inferior because, unlike his two older brothers, he had been circumcised.

After about a year of interrupted briefer psychotherapy, combined with extramural medical regimen, both cases D-10 and D-11 presented x-rays showing healed lesions, and the sedimentation rates had become normal. It was noteworthy that changes in repeated x-ray pictures and sedimentation tests occurred in direct relationship with the emotional context on which they were working.*

Treatment.—Because of the similarity among tuberculosis patients it might be assumed that one special method of treatment should be followed but, of course, therapy must be focused on the individual rather than on the disease. Some patients need to stay in bed; others go into a rapid decline if forced to stay in bed. Some respond well to operation; others do not. Some need psychoanalysis; others do much better with some briefer forms of psychotherapy discussed in Chapter XVI. Day began to discover the characteristics of the tuberculous personality in 1935, but he concludes his article with a 1946 postscript which reads as follows[381]:

"The foregoing was written and delivered before I had received any psychiatric training or had been taught the correct terminology. I have since learned by experience in the Army Psychiatric Service that it is not always necessary to raise conflicts and forgotten traumata to the conscious level. In a vast majority of everyday cases there is no more need to drag in—or drag out—the ubiquitous Oedipal Situation than there is to invoke the Second Law of Thermodynamics when soldering a kettle. Therapy can operate directly on the unconscious, giving it, as it were, a wholesome tweak which helps it to unravel itself. It is hard to understand how this happens, but no harder perhaps than understanding how much trusty empirical treatments—such as hot water bottles, deep massage, and bottles of medicine—alleviate concealed underlying organs in distress. Both patient and physician are equally in the dark as to what really happens inside, but whereas the patient accepts the change gladly and unquestioningly, the physician cherishes a Scientific Hypothesis."

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* For a fuller analysis of this and similar case history material, the reader is referred to Dunbar: *Psychosomatic Diagnosis*, Revised Edition, 1948.

Asthma and Hay Fever

Responses of the respiratory system to allergens (unlike responses to the tubercle bacillus) are among the earliest illness syndromes to be studied psychosomatically. The modern allergist is well aware that whatever skin tests may indicate, removal of the allergen does not always result in the relief of symptoms, and that often relief of symptoms occurs without removal of the allergens.*

It is well known that allergic patients, whether they complain of migraine, asthma, hay fever, disorders of the skin, or colitis, can rarely, if ever, be classified as suffering from one of these syndromes alone. They usually have migraine and a sensitive skin and a tendency to hay fever, in combination or in alternation. They also have obvious behavioral problems; so, if the ulcer patient is to be considered as representing the border line between a disturbance of energy economy which finds its outlet in psychosomatic symptoms and a disturbance of energy economy which finds its outlet in behavioral symptoms, it is reasonable to state that the allergic group are one step over the border. They not only combine fairly obvious somatic and behavioral disorders; they also have a striking diversity and range in their somatic dysfunction.

Fenichel[383] called this group of disorders *pregenital* conversion, which seems an unfortunate term, but it has its justification in the fact that just as conversion hysteria has been said to be "hydraheaded" (you eliminate one conversion symptom and another has developed in its place), so if you eliminate one allergic manifestation you find that another has developed in its place. This is extremely annoying to the physician. Alexander[375, A] tried to make this phenomenon more acceptable by developing a theory of *vector analysis*, "tendencies classified according to their fundamental dynamic quality (direction)." This theory is useful and palatable to many physicians who are confused by the hydraheaded monster that must be combatted in allergic patients, but it is occasionally disillusioning and in itself confusing. Bibring,[376] Kubie,[389] and others have discussed the repetition compulsion in some detail. It is particularly characteristic of sufferers from allergy, including certain types of colitis.

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* The most complete review of earlier literature is to be found in Dunbar: *Emotions and Bodily Changes*,[3] and in French and F. Alexander: "Psychogenic Problems in Bronchial Asthma," *Psychosom. Med.*, Mon. 122, 1941.

Fenichel[383] has discussed this point also, but he discusses it mainly in terms of the libido concept. He says:

> " . . . the theoretical *concepts of the libido* used to interpret the respiratory neuroses are corroborated by facts observed in compulsion neuroses: compulsive breathing ceremonials are connected with a number of prohibitions and commands, which all serve as the expression of phantasies of impotence related to the act of breathing. (See Deutsch, Helene. Zur Psychogenese eines Tiefalles. Int. Zischr. f. Psa. XI, 1925) Phantasies of this kind are found *just as frequently* in true compulsive patients as in asthmatic individuals and an ethnological parallel can be seen in the oft-described elaborate methods used by some primitive peoples, and certain contemporary religious sects, who practice magic by regulating the breath. This well-known universal magic meaning ascribed to breathing certainly cannot be explained by the mere fact that *it is the only function by means of which man can exercise a voluntary control over his viscera.* There exists no narcissistic-animistic philosophy of life in which breathing as an expression of life itself is not invested with narcissistic libido." (Italics mine)

Fenichel goes on to discuss observations made by Roheim,[391] Daly,[379, 380] Harnik,[385] and others, but he never quite gets back to the relationship of these disorders to disturbances of ego function. He does, however, make this important comment:

> " . . . we deal here with *the inhibition of an ego function.* The intimate relationship which exists between anxiety and respiration makes it probable that the constant variations in the respiratory function are based on a constant unconscious responsiveness to anxiety. . . . "

This comment may be extremely useful to the clinician because a disturbance in breathing almost always is a sign of anxiety which, if not completely overt,[*] is relatively near to the surface, though often difficult to analyze.

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[*] Anxiety begins to be overt in the classical neurotic symptoms and phobias, but it is not elaborated until it gets over the borderline.

This is one of the fields in which the physician should make himself acquainted with what his patients have read. For example, in Scribner's Magazine, August, 1937, page 48, there appears the following statement:

"We are always more or less irritated with other people's sex life, and at a loss to understand two other people fraught with desire under the elms. Our own necking seems entirely normal, but all other snugglers seem a little out of their heads, if not even slightly disgusting. It is always a little bit nauseating to imagine Jim and Betty in the boudoir together. We should never try.

As I write this, I find myself carrying this loathing-for-the-other-fellow's-sex-life into the very world of plants. There are a lot of locust trees outside my window, lush with the mating instinct. I am actually sickened by their unabashed effort to reproduce—under my very nose. Their rich pollens, perhaps sweetly odoriferous to many people, are repugnant to me. I am torn from stem to stern with violent hay fever as a result of the floating, flying, ubiquitous love powders of these damned locust trees, or something else in the vicinity.

"Maybe only God can make a tree, but I wish He could make new little baby trees without tearing the lining out of my nasal tract clear down to my diaphragm. I wish He had put trees on feet or wheels so that they could get about at night and mate like the rest of us, instead of broadcasting their amor dust into the air for miles around and into my pathological nostrils."

Even the press has been occupied with asthma and hay fever, and the following is only one example, which appeared in the New York Herald Tribune on November 26, 1946.

"HAY FEVER CASES REPORTED AIDED BY PSYCHOLOGY

DOCTORS HEAR EMOTION, NOT ALLERGIES, MAY CAUSE IT AND ASTHMA AND ECZEMA

"Hay fever, asthma and eczema which refuse to yield to nasal treatment may sometimes be caused by the emotions rather than by an allergy, two California physicians reported yesterday to the American Academy of Allergy, meeting in the Pennsylvania.

"Dr. Hyman Miller and Dr. Dorothy W. Baruch, of Beverly Hills, discussed twenty-two such cases which were treated by psychological means. Individual and group psychotherapy for adult patients and play therapy for the children resulted in a cure in six cases, and improvement in thirteen others, they reported. The three failures were patients whose treatment did not proceed far enough. In all cases, purely physical treatment had previously failed.

" 'People use allergy to express hostility,' Dr. Miller said in a discussion of his paper. A person who cannot show hostility to his associates because of the complications that may arise will turn up with an incurable eczema instead.

"In all cases, Dr. Miller said, the allergic disposition is present in the patient, but under normal emotional conditions the allergy might be latent or mild and would yield to conventional treatment. Under the stress of emotions, however, it can become chronic and disabling.

"Dr. Miller advised the doctors gathered for the meeting that a physician 'will be stymied if he tries to treat all allergy patients with purely medical weapons.' The psychotherapist should be called upon for aid, Dr. Miller said."

Life Magazine and other periodicals have devoted attention to this subject. While the press reported, Life took pictures and wrote an article, which appeared in the October, 1946, issue, page 38, as follows:

"BLAME ASTHMA IN BRIDE DEATH

"Death might have lurked in the bridal bouquet carried by Angela Rose De Fabrizio, 21, who fell dead at the foot of her marriage altar on October 6, according to an autopsy report released today.

"Dr. Theodore J. Curphey, Nassau County Medical Examiner, said it was possible that dust from the bouquet or something in the air of the church where she was to have married John Mastantunano, might have combined with the bride-to-be's physical condition to cause her death.

"Angela, who collapsed on the arm of her father as she walked down the aisle of Our Lady of Good Counsel Church, Inwood, L. I., had previously suffered from asthmatic attacks which narrowed the air passage of her lungs."

"A BRIDE DIES AT HER WEDDING

"Rose De Fabrizio met John Mastantuono when they were high-school students in Inwood, Long Island. They were soon sweethearts, but the war came before they could get married. John went into the Army for two and a half years. Eight months ago he was released and they decided to get married.

"Rose left her job immediately. But they made their final preparations carefully. John found a good job. He even found a house and with his father's help bought it. Then they set the date, and rushed into the flurry of last-minute plans. Rose bought a wedding dress. John bought a ring and borrowed a car for their honeymoon in Atlantic City. They hired a photographer to take pictures of the wedding. On the morning of the wedding, even though he knew it was supposed to bring bad luck, John saw his bride briefly. When she left him she said, 'John, I love you with all my heart.'

"Four hours later Rose De Fabrizio and her wedding party drove up to the steps of the church. Inside the organ was playing *Here Comes the Bride*. People were crying happily and the photographer was busily taking these pictures. The bride was too excited. She stepped on her wedding gown. She toppled onto the church steps. Somebody screamed. Her father thought she had fainted, asked for help. But the delirious excitement of the long-planned moment had been too much for her heart. She was dead.

"When the bride, who was only 21, was buried four days later, she wore her wedding gown."

Brown and Goitein[377] in speaking of the meaning of asthma make statements to the following effect:

"No authority seems to have dwelt on the possible *symbolic* significance to the psyche of the sensitizing agent and of the hundreds of allergies that may, by test, etc., prove causal, whether animal, vegetable, material, or meteorological. None paused to examine why fruit, milk and eggs, hair and seeds, paper and silk, etc., damp and height, and the all-important puberty period should be in any way significant to the patient in this connection. . . . It typified the post-war psychology of 1918-1930 when environmental trauma and perverted instinct were specially stressed; e.g., instinctual desire to dominate was operative. Hence the presence of aggression (Clarkson), a hostility toward parents (Rogerson), an evident over-pampering by the mother (Strauss) or motives of self-punishment (Gutheil) in a milieu of overanxiety (Pearson) all played their part. The internal mental environment (Oberndorf) was also at fault and an affective pre-disposition (Sadger) favored the paroxysms which emotional traumata (Fenichel) set in motion. Thus asthma could be looked upon as a narcissistic neurosis, or even a 'repetition compulsion' symptom (Alexander) which was now stressed as the mental equivalent of the 'conditioned reflex' which asthma assumes. Steckel understood the attack as the equivalent of intercourse. . . .

"The oversensitiveness of these areas, turbinates, skin, and bronchi is a regressive phenomenon and probably comes about through a relative *inhibition* in the sensitivity of the sexual parts themselves, with resultant anesthesia or insensitiveness (which may be the effect of unconscious fear, rage, or other tension, but can be more safely expressed heightened sensitivity, especially to sexual *reminders* and emanations) in other areas. Thus, we suggest the acute paroxysms of outbreaks may in the first place affect only the nose which 'smells out' a situation charged with emotional tension, and involves a prominent organ serving as a ready substitute (by displacement) for the original; sensitive to sexual smells and pollens (with their seminal odor) even of too slight a threshold for conscious awareness; hence, the sneeze of rejection (compare the blink reflex and similar local reflexes). Dammed-up tensions also affect the skin protein (intolerance in hives) and also the bronchi whenever a break-forth (outburst) of stimulated rage or other violent component of libido is precipitated. This is more likely to occur in those who are already relatively impotent and 'anesthetic' (as appears to be the case) or are constitutionally predisposed.

"Each outburst represents then the organism's attempt at protest before 'insults' and to reject what is 'foreign' to it (ultimately in its own nature). This is seen on the personality side in a sensitiveness to criticism, of personal insult and readiness consciously to take offense and 'boil with rage'; and on the systemic, the many aspects of sensitivity in the allergy syndrome. 'Sensitivity' is displaced repressed sexuality. The asthma syndrome, in particular, fulfills the purpose both of rejection of the orally incorporated 'object'—air in the overfilled lung—and also the struggle for its retention. This, be it understood, is to preserve proof of virility (capacity); hence, the ever-present fear of its loss (elimination) with repetitious revival of all the frustrations and dreads of infancy if this is threatened. . . . "

Brown and Goitein published an earlier article of which the following is an abstract:*

"This study is based on an unselected series of 40 asthmatic and 40 otherwise allergic subjects, ranging in age from 12 to 60 (mostly 20 to 45) and with a period of disturbance varying from 5 to 10 years or more. A control group of healthy individuals was also studied. The patients were observed clinically, biotyped psychologically, given various objective tests, psychiatric interviews by the indirect method and the technic of 'associative anamnesis,' and in some cases more lengthy interviews of a therapeutic order. The documentary case notes were subjected to a 5-point scale of rating and reference under certain agreed heads and subheads as used by Bleuler, Kretschmer, Freud, Cattell, McDougall, etc. In the asthma group, clinical observations showed a high percentage of individuals with a specific type of character, the *constrained* order (42%) such as is found among obsessives, with a *conative* secondary function (45%) and a mental attitude of *magnanimity* (openmindedness) (30%). They also showed equanimity of mood (poise) (45%) but definite indications of repressed instincts of hate (32%) and more manifest instincts of ambitious drive for ascendancy (36%). These patients are impatient, assertive, heavy-fisted dynamic types. They usually belong to a biotype best described as reflex or reactive (36%) and physically are pyknosome (42%). There was an obsessional neurosis in 13% of these patients, who show all evidences of fixation on oral and anal levels, with oral erotism and anal sadism playing significant roles. This picture is specific for asthma. Sinistrality was present in 39%, and ambidexterity in 12%; an introversive tendency (24%), and passive submissiveness in 20%. Only 15% were unmarried. Their intelligence was on the whole above average. Some economic and social stress was implicated in over 40%. Only in a small proportion was the disease considered parentally determined. The non-asthmatic allergic is vivacious in disposition (42%) but shows repression of passion and personal ardor (45%). He shows a more hysteroid personality (30%) but in biotype, temperament, mood and secondary function, he parallels the asthmatic. He is liable to breakdown of the anxiety group with hysterical conversion. He is non-sinistral. This group as a whole has reached genital levels of ego function. Psychiatric findings in the asthmatics show significant neurotic disturbance in 8 (30%), and distinctive character anomalies in 9 (23%). Twenty-three were considered normal. 2% showed repressed rage, 13% repressed masochism. Greater emotional and domestic stress was present in the background of the asthmatic attacks than was the case in the allergic or control group; but both allergic groups showed a greater degree of neurotic maladjustment than the controls. The pattern of personality in asthma is the 'respiratory personality.' The asthmatic is of cyclothymic disposition associated with paranoid features, repressed hostility and self-punishment drives. The time relationship of the attack to frustration and emotional tension is explained by displaced affects of rage, the guilt libido thereby finding equivalent gratification." [378]

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* This abstract is taken from Series 12, 1944, of the abstract series mimeographed by the Hartford Retreat under the direction of Dr. C. Charles Burlingame.

Because both patients and their physicians are well acquainted with the importance of the psychosomatic approach to the treatment of allergy, it would seem unnecessary to go into further detail in this synopsis, although the following comments may be in order. Although allergy to oak, birch, beech, or face powder is not common, about 10 per cent of the population manifests some kind of allergic reaction. The importance of the allergic history should be evaluated somewhat as the modern physician evaluates a familial history of cardiac disease. This is found in patients who do and do not suffer from cardiovascular dysfunction. Apparently there is something else that determines the symptom complex. Some writers are content with the statement, "It is 75 per cent psychosomatic," but such statements are of little value unless the physician is sufficiently trained in psychosomatic techniques to know what to do. Skin tests on "normal" individuals are often positive when they do not develop asthma or hay fever.

Most of the serious psychosomatic investigation in this field has been done by, or is reported by, Alexander, French, Dunbar, Saul.

Alexander[363] in a lecture on research and orthopsychiatry made the following statement:

> "Now we come to asthma. I cannot tell you much about the psychology of the respiratory system. But a very consistent finding in asthma cases was the precipitation of an attack when the dependent relation to the mother was threatened. Asthma nervosa is the equivalent to a suppressed cry for the mother, suppressed mainly for fear of rejection. Very often we find rejecting mothers in the histories of our asthma patients."

It appears then that any general practitioner, pediatrician or allergist should give careful attention to individual and familial background. Sometimes a consultation with the psychiatrist is desirable.

In contradistinction to infectious diseases, allergy was early recognized as a psychosomatic problem—by Hippocrates, and in 1682 by Willisius. This fact is interesting because special susceptibility to a noxious element in the external environment is observed in both cases. Today, it is easier to demonstrate by laboratory techniques (skin tests) a special susceptibility to timothy grass than a special susceptibility to colds (germs and virus).

One of the earliest reported cases psychosomatically described is that of a boy working in his father's flour mill who was allergic to flour. He was told to move to a different town and to take a job other than in a flour mill. He moved but, as things worked out, the new job offered was in a flour mill, yet he was no longer allergic to flour. When he returned home, however, and worked for a brief period in his father's mill the asthma returned.

It has been amply demonstrated that attacks of asthma or hay fever may be eliminated by therapy of the emotional factors involved even though the skin sensitivity test remains positive.

It has been suggested that even rheumatic fever may represent an allergic reaction to some form of streptococcus infection. Whatever further research may show, rheumatic fever is an illustration of an illness of unknown causation in connection with which diverse etiological hypotheses (germ-virus-allergy) have been proposed but in which a fairly well-defined personality constellation has been recognized as characteristic.

The recent war emergency brought gastrointestinal diseases to the fore. These complaints cover a range from nervous indigestion (including anorexia nervosa) through peptic ulcer and the various forms of colitis to disorders of the gastrointestinal tract necessitating operational procedures.

It is interesting that susceptibility to infection and allergic reaction plays a considerable role also in gastrointestinal disorders. Patients may be allergic to the army diet—milk, egg yolk, liver—and apparently as a result of regulations requiring such a diet, develop nausea, diarrhea, colitis, migraine, skin disease, or some other disorder, or they may be allergic to the routine.

The personality factors and the emotional conflicts related to these disorders occupy a large part of the literature of psychosomatic research and should be familiar to physicians engaged in industrial medicine and postwar re-employment problems. It should be possible for the industrial physician, and/or personnel director to detect the applicant for a job who might be made sick by the job for which he is applying. Among those with a peculiar susceptibility to any type of organ dysfunction there will be some who will react favorably to the new job routine. But how to know! Personality profiles will help.

Bronchitis and Other Disorders

In contrast with other common disorders of the respiratory system, such as tuberculosis and allergy, there has been little psychosomatic investigation of "bronchitis and others." Actually similar principles apply. Patients say, "When I get a cold it always goes to my chest." Some patients experience spontaneous pneumothorax apparently for no reason at all. All that has been learned from study of the syndromes described in the first two sections of this chapter should be applied in the treatment of patients who "just have colds or a touch of bronchitis." Drugs, of course, help but if further complications such as a possible pneumonia are to be avoided, more than drugs or rest may be needed. Special attention should be devoted to early familial, personal, and illness history as well as to possible precipitating factors. It may be that the time of both physician and patient will be saved (and this includes labor and hospital expense) if the physician spends a few extra minutes in sitting down quietly and asking the patient why he thinks he got sick.

CHAPTER XI

GENITOURINARY DISORDERS

Urinary Frequency and Retention

The importance of emotional factors in urinary disorders has received long and constant comment in medical literature.[3] Perhaps the most important psychosomatic aspect of genitourinary and gynecological problems is the phychosomatic awareness of the specialists who usually treat these conditions. These physicians are under a particular handicap in developing insight into the emotional problems involved, because the urologist devotes most of his office hours to males and the gynecologist to females. Yet disorders of the genitourinary and reproductive systems usually involve the relationship between male and female from the point of view of cause, or effect—or both.

The majority of disorders of the genitourinary and reproductive systems may be considered in the following categories: 1. Disorders aggravated by a microorganism, infectious or not. 2. A wide range of changes in organ function brought about mainly through the vegetative nervous system. 3. Disorders aggravated by a disturbance in metabolism. 4. Disorders in fertility.

Enuresis

Schlionsky[420] reports a clinical study of one hundred cases of functional enuresis in the Army. Nocturnal enuresis appeared to be higher incidence than in civilian life. He concludes that: 1. These patients were passive and inhibited. About half had been so from childhood as indicated by nervousness, nightmares, temper tantrums, nailbiting, and stuttering. 2. Aggression was expressed only in intermittent outbursts. 3. Most had not succeeded in civilian or Army life. 4. Pronounced overt anxiety states were uncommon.

Resulting from this study is the conclusion that functional enuresis in adults is generally one expression of a life-long pattern of neurotic maladjustment and personality disorder, and not infrequently associated with a low level of intelligence.

In the evaluation of observations such as these, it is important to avoid the mistake, as Schlionsky seemingly did, of putting the cart before the horse. Sufferers from enuresis become embarrassed, shy, and inhibited, and hence, often appear to be of lower intellectual ability than is actually the case. They are afraid to be questioned or examined, just as in childhood they dreaded the mother's discovery of wet sheets in the morning. This, of course, affects the level of their vocational achievement also. The author has observed changes in intelligence as judged by I. Q. tests, as well as changes in vocational adequacy as a result of correction of enuresis.

Although some authors find with considerable frequency, psychopathic personality types in these patients, it appears that both the psychic and the somatic symptoms develop from the same background. One cannot be considered the cause of the other, and the earlier the treatment of the enuresis, the less likely are psychopathic traits to develop.

Ritch,[416] under the title of "Urologic Neuroses and Psychoses" reports a series of cases of which the following are of some interest:

Case I.—Urinary retention. Female, 32 years, unmarried, complete retention followed by complete incontinence. The condition was psychogenic. The patient had lost her sweetheart, who moved to another city, and fell in love with someone else.

Case II.—Female, 32 years, unmarried, complained of pain in bladder. One neurologist diagnosed cystitis, then adhesive intestine, and advised laparotomy, but no improvement occurred. A possible diagnosis is that the patient had several married brothers and sisters, while she solely supported her invalid mother.

Case III.—Male, officer, 33 years of age, complained of urethral discharge, itching, burning urethra, and mild impotence. Received continuous treatment for four years consisting of vigorous massage and silver nitrate installations, among other forms of treatment. He also had a mild degree of prostatitis. After two months of psychotherapy the organic lesions disappeared.

Bogard[397] speaks of simple types of "overfrequent micturition" which are usually caused by the weather on the military front—all of them without organic basis. This syndrome was exaggerated in patients with severe emotional conflicts; but often the symptom was relieved without treatment of "underlying disorder."

Goldman and Bergman[402] made a Rorschach and psychiatric study of adult enuresis. They state that enuresis was three times more frequent in Negroes than in whites. Careful genitourinary investigations of all 157 Army cases gave negative findings. The clinical findings were: (1) in every case clinically demonstrable psychopathology was found; (2) in many cases, severe mental deficiency; (3) a high incidence of psychoneuroses; (4) a very low incidence of psychopathic personality. Although no clear clinical picture was found, the personality constellations were predominantly passive, obedient, sensitive, and conscientious.

In the etiology of enuresis these authors emphasize the sexual component, that is, a substitute sex behavior and an attempt to recapture infantile care. It may also represent a repressed active hostility. They feel that mental deficiency prolongs and intensifies the period of enuresis. Here again, however, the findings should be carefully evaluated in terms of whether the apparent mental deficiency is not more of an effect than a cause.

Other studies of this syndrome have been made as a result of military experience, and are being released. More references will be found in the bibliography. It is important to note that even though this syndrome was encountered more frequently in the Army than in civilian life, those who suffered from it usually reported toilet training difficulties in childhood.

Huschka,[403, 404] and Despert,[399] among others, have studied this problem in children. The major conclusion is that the mother is usually responsible for prolonged bed wetting An important factor seems to be anxiety, or aggression as related to anxiety. It happens not infrequently that the older children in a given family suffer from this complaint, whereas younger ones for whom the mother has less time succeed in training themselves very early. Of course, a favorite child about whom the mother is overanxious, or a child too much neglected may develop the same symptom. It is well known that fear and tension may disturb urinary control, sometimes in the direction of increased frequency, and other times in the direction of retention.

Treatment should begin with a careful personality history and in most cases should be focused on the relationship with the mother. When feasible, with younger patients, the mother should be treated also.

Cystitis

Whatever the micro-organism involved in cystitis, personality factors play a major role in susceptibility and recovery, as is indicated in earlier literature.[411, 412] Careful attention to personal hygiene, including clarification of conflicts, may prevent recurrence.

In cystitis, recent psychosomatic studies indicate that the conflict usually centers around sexual difficulties. The condition is probably an expression of disgust and guilt feelings concerning intercourse. Psychodynamically, it is likely that feelings of guilt are aroused in connection with unconscious pleasurable feelings, or feelings of hostility, in conjunction with urination.

The case history of a patient in the author's care illustrates the importance of emotional factors in the disorder.

The patient, 43 years old, was married and previously divorced, and had a son 15 years old. She had a younger brother who died. Her childhood was extremely disturbed and lonely. Her father suffered from coronary disease, and a long-standing illness. Her mother had various minor ailments among which a mild chronic bladder disorder was prominent.

Her sexual adjustment was superficially good. There was a complete dependency on sexual satisfaction for a sense of "well being." "I do not respect any man. I need them for sex, but otherwise they are all disgusting. What makes me mad is that they have a better time than I have." She has strong homosexual tendencies, was promiscuous, and compulsive.

She identified herself with her father, and unconsciously appeared to emulate his downward course and process of disintegration. She hated her mother by whom she felt rejected. She was overprotective toward her son, and alternately attempted to use him as a father substitute.

Hysterical, destructive, and suicidal impulses were the expression of her active-passive conflict. From infancy she had been denied close human contact and, as an adult, her feelings toward men, women, parents, and children took the form of a paralyzing ambivalence or "dead-lock."

After intercourse, cystitis very often set in. It was as though she planned to get cystitis so that she would not be able to have intercourse. Since sexual satisfaction appeared, subjectively, so important to her, cystitis was the expression of a self-destructive wish.

Here again, treatment, to remove the symptoms permanently, would have to deal with emotional disturbances as well as the local disorder.

Impotence

Recent literature on impotence is comparatively small.*

It is well known that a patient may be impotent with one partner and not with another (or within marriage or outside of marriage), or only intermittently during periods of emotional stress or perhaps conflict more specifically related to his partner.

In many ways the psychodynamics in impotence are very similar to those in frigidity. The impotent man is often submerged by the family. He may be encouraged to be a boy, but never a man or a father. Often he may have been intended to replace a girl who died. He may hate women, and have ambivalent feelings toward his own sex. He may lack sex information, and usually has severe guilt feelings in relation to sexual activities. Such measures as prostatic massage never cure impotence, but rather aggravate the conflict. This is true even though there may be other indications for the procedure.

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* For the earlier literature see Dunbar.[3]

One fortunate emphasis made in recent literature by psychiatrists and genitourinary specialists alike, is against local treatment of this disorder. Local treatment is rarely successful and often aggravates the condition. Treatment should follow the lines suggested in Chapter XVI.

In prescribing treatment for such patients it is, of course, important to ascertain the exact nature of the clinical manifestations of their illness. The emotional conflict associated with premature ejaculation differs slightly from the conflict associated with prolonged erection without ejaculation, or priapism. It should be noted that physicians sometimes make a mistake in therapy, not only through too much concentration on the organ involved but also through their timidity or clumsiness in requesting information necessary to understand its basis.

In psychoanalytic literature there are many references to impotence as one among many symptoms relieved during the course of treatment.[398]

For further discussion of the underlying psychodynamics and therapeutic procedures to be used, the monograph and articles by Bergler[393-395] should be consulted.

Gynecological Disorders

The relationship between gynecological disorders and emotional factors has been recognized and commented upon for centuries. It is, however, only in the last few decades that the importance of psychic factors in functional or even organic gynecological disturbances has been studied by both psychiatrists and genitourinary specialists. Most helpful in this new approach has been the psychoanalytic method which has aided considerably in elucidating the relationship between neurotic disturbances and bodily dysfunction.

1. Disorders of Menstruation.—The bulk of the literature on gynecological dysfunctions concerns itself with disorders of menstruation. For a review of the early literature, see Dunbar.[3]

Dysmenorrhea is encountered almost daily by the physician in general practice and may occasion for him as many cramps and headaches as are reported by his patients because after going through his drug list he is usually forced to the conclusion that nothing works. Fortunately, dysmenorrhea is going out of fashion because of culture changes and a trend in the direction of better hygiene for women. Hence, the number of these patients is decreasing, but those who remain present rather similar histories.

REVIEW OF LITERATURE

A cursory review of recent literature in this field may well begin with a statement that the psychosomatic approach has become more prominent and may include mention of a change in the type of woman encountered during the last decade as compared with those in the preceding decade. Mention is made of better methods of sexual instruction and a general change in the attitude of both men and women toward menstruation. It is ceasing to be considered a sickness, a curse, or a social handicap requiring that the husband plan his dinner parties according to the menstrual cycle, or that the industrial employer has to make an allowance for his employee's absence three to seven days out of every month.

In its clinical symptoms dysmenorrhea is said to be recognizable by lack of anatomical pathology and inconstancy of pain which varies considerably with specific pleasant and unpleasant experiences. The area and type of pain are sometimes distinguished in terms of (1) intermittent, labor-like pain with occasional discharge of blood clots; (2) pain from hyperemia, shortly before the onset of menstruation and subsiding with the advent of the menstrual period; (3) menstrual colic; and (4) membranous dysmenorrhea.[413] Furthermore, it may also be recognized by its ready amenability to various medical measures. The occasionally prompt and effective cessation of dysmenorrheic pain by suggestion on the part of the gynecologist may be helpful in the diagnosis of dysmenorrhea. Dysmenorrhea is sometimes differentiated into primary dysmenorrhea, in which case the pain starts at the menarche, and secondary dysmenorrhea when the pain starts after the patient has had a normal period of menstruation for some time.[422]

In case of chronic dysmenorrhea where careful gynecological examination has (or even has not) ruled out organic lesions, or anatomical deformities, the psychic components are the underlying causes of the dysfunction. In organ neuroses, where the physical dysfunction may be the expression of a conversion mechanism, the causative factors are coordinated with and develop from the underlying neurotic constellation of the patient's personality.

Secondary dysmenorrhea and those instances where the pain is intermittent and varies in intensity from menstrual period to menstrual period are probably caused by psychic disturbances of a less severe nature. Unpleasant experiences which are associated with the menstrual period or the genitalia may lead to attacks of dysmenorrheic pain.

Wittkower and Wilson[423] in a study of 57 women with primary dysmenorrhea, in which they investigated the life histories of the women, found certain personality constellations. These patients as children were definitely maladjusted—aggressive, obstinate, tomboy-like, and generally socially difficult. As adults, these patients manifested a deep resentment against their feminine role, were generally shy and shut-in, and had a general background of multiple anxieties. The dislike of the feminine role which these patients have and the consequent conflict in relation to their position as women often manifests itself in menstruation, a unique feminine function.

Dysmenorrhea is an interesting illustration of the ready accessibility of the genitourinary tract to conversions of the individual's neurotic disturbances in relationship to his sexual role and sexual functions. Gynecologists and general practitioners to whom so many women come with complaints of dysmenorrhea should make a careful study of the patient's personality and behavior, not, however, expecting to find psychic disturbances, because such patients have concealed these so well that they appear poised, normal and well adjusted except perhaps during their menstrual periods.

The treatment of dysmenorrhea will, of course, vary with the degree of psychic disturbance. Suggestion and hypnosis have been employed effectively in removing the symptoms.[422] It is advisable, whenever possible, to ascertain the general background of the patient's life history, and specific experiences preceding the onset of the pain before making a gynecological examination which may either frighten the patient by making her feel misunderstood or re-enforce her unconscious conflict.

Gill[401] discussing functional disturbances of menstruation mentions the following points: (1) Menstrual taboos in relation to the present attitude toward it: remnants of primitive taboos in menstruation are still present in men and women today. (2) The psychological significance of menstruation to woman is in terms of her orientation toward child bearing. (3) The various endocrine therapies in vogue contradict each other considerably. Their success in treatment of menstrual disorder is due largely to suggestion as indicated by follow-up studies. Gill feels that the success of treatment in dysmenorrhea by hypnosis is limited to removing the symptom, which in most instances was followed by a displacement of the symptom. He cites Fremont-Smith to the effect that as yet no clear-cut connection between uterine contraction and dysmenorrhea has been found. In fact most of the "organic" theories on the topic are not sufficiently substantiated.

Kosmak[406] in an article, "Psychosomatic Aspects of Gynecology and Obstetrics," indicates his awareness of the emotional factor in dysmenorrhea and refers to the use of hypnosis by Kroger and Freed[407] with favorable results. He mentions also Hammond's observation that patients with dysmenorrhea have an intrinsic factor which makes them more susceptible to pain sensations. It should be noted, however, that this susceptibility to pain is of a type that does not yield readily to treatment by sedatives and analgesic medicine.

The most thorough psychosomatic study of the female menstrual cycle was made by Benedek and Rubinstein.[392] Rosenzweig[417] and others have published articles with reference to this monograph. In the preovulative phase with rising estrogen, an active heterosexual trend with a sense of well-being is predominant. In the postovulative phase in which progesterone is secreted, and the estrogen cycle is ended, a shift of attitude occurs. The woman's interest is more likely to be on her own body, a feeling of passivity and desire to be loved predominating. Both phases have a psychological "forward looking" phase. In the premenstrual phase with sex hormones at the lowest, psychological "eliminative" and "cleansing" side-trends appear. Attitudes of guilt and inferiority may be present. As a compensation, fantasies of pregnancy may appear. With onset of menstruation irritability and depression may occur, which could be interpreted to be the psychological reaction to a biological frustation. With increased flow of estrogen the cycle is resumed.

In brief, the physician's problem is not that of differentiating among diversely labelled types of menstrual dysfunction, but rather of evaluating emotional factors associated with each. There appears to be a relationship between dysmenorrhea and obesity. Both are ascribed by patients, and often by their physicians, to endocrine dysfunction. Bruch notes that fewer than one out of 200 cases of obesity have a glandular ailment. Friedel[400A] states that for every individual who worries himself thin, three worry themselves fat. The same could be said about menstrual dysfunction. Recent studies indicate that the conflicts associated with these two conditions are similar, which may be one reason obesity and dysmenorrhea occur so frequently in conjunction.

Functional amenorrhea used to be considered an endocrine problem or else attributed to diet, geographical changes. It is true that in nonadolescents this often occurs when a woman changes her environment.

Recent experience indicates that an important factor is change in her sexual environment, leaving a husband, or being left by a husband or lover.

Marwil[408] who made a thorough gynecological study of amenorrhea among women in the Navy states:

> "Functional amenorrhea is a cessation of menses in women who have previously menstruated, although the uterus and ovaries are apparently normal. The focal point of the disturbance is always the ovaries."

His examination of 100 Waves, supplemented by vaginal smears, indicated that the menstrual function was normal. Psychotherapy was used, and in most instances (83 per cent) the menses occurred ten weeks after the onset of amenorrhea. Marwil believes that amnorrhea was due to the shock of entering the Navy, discipline, fear, and homesickness. He believes that the "psychic disturbance affects the gonadotropic functions of the anterior pituitary gland, which in turn brings about a change in the ovulation—either stimulating it prematurely or suppressing it temporarily. However, the explanation could not hold in all instances."

Sher[419] studied delayed menstruation in the British Women's Auxilliary Air Force, in relation to (1) incidence of delayed menstruation, (2) relationship of delayed menstruation to occupation, (3) relationship of delayed menstruation to protein content of diet, and (4) the best form of therapy to be employed. Some of his conclusions are:

1. The hypothalamus governs emotional response to external environment, response being expressed by hypothalamic, sympathetic, and parasympathetic nervous systems.*

2. Hypostimulation produces autonomic discharge, the final effect being dependent on preponderance of sympathetic or parasympathetic nerve fibers.†

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* **Masserman: Is the Hypothalamus a Center of Emotion? *Psychosom. Med.* 3: 25, 1941.**

† **Gellhorn: Physiological and Pharmacological Investigations on the Nature of Hypothalamic Excitation, *Am. J. Psychiat.* 97: 944, 1941.**

3. Injection of estrone in ovariectomized animals causes a hyperemia of the uterus and an increase of its acetylcholine content. Bleeding may depend on the latter.*

4. Luteinizing hormone is released from the anterior hypophysis by an acetylcholine-like substance liberated by the hypothalamus.†

Sher states that the psychic trauma will activate the hypothesis to produce adrenalin and acetylcholine. However, should sympathetic fibers predominate, then a relative deficiency of acetylcholine will be present and thus bleeding will be suppressed resulting from either (a) local deficiency of acetylcholine in the uterus, or (b) absence of luteal hormone and consequently corpora lutea.

2. **Frigidity and Sterility.**—Wittkower and Wilson[423] in their study on dysmenorrhea and sterility note certain features in the personality make-up of the sterility group. As children the patients were "excess of ailing, timid, and sociable children, devoid of self-assertion." As adults the patients were "self-centered in their social and personal relations; sexual frigidity with abnormal reaction to coitus." These authors conclude that sterility is probably caused principally by (1) an endocrine imbalance caused by emotional factors, and (2) dryness of the vagina, lack of orgasm, which may prevent the progress of the spermatozoa, or pelvic spasms may contribute to sterility as well.

Orr[414] reports a case in which a wife became pregnant about three weeks after adopting a child. Psychoanalytic study of the patient revealed a conflict over her feminine role, which may have been resolved partly by psychoanalysis as well as by the decision to adopt the child. In the latter case normal conception would follow such a decision to adopt a child. The patient had a gynecological fibroma which was removed. It was suspected, however, that the fibroma was of psychogenic origin.

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* S.R.M. Reynolds: Am. J. Physiol. 95: 258, 1939.

† Saskin and Laubenhaus: Endocrinology 29: 958, 1941.

It is well known in adoption agencies that a high percentage of parents applying for babies have children of their own a year or two later. Although these same persons may have gone through the routine of the Rubin test and endocrine treatment for five to fifteen years prior to their application, there has been so little psychosomatic study in this field that an introductory section reviewing literature is not of much value. The practicing physician, consulted about sterility, may well bear the following points in mind. A negative Rubin test one month does not necessarily mean that the patient is suffering from a lesion which has occluded her tubes. Very often, if the Rubin test is repeated one to three months later, the tubes will be found patent. Some obstetricians report that sterile patients tend to become pregnant immediately following the first Rubin test whether the results of the test were positive or negative. A possible explanation for some of these apparently contradictory observations lies in the fact that the tubes consist of smooth muscles and are mainly under the domination of the sympathetic nervous system. A tubular spasm may occur as a result of tension or emotional conflict during the brief period in each month in which the woman is fertile. Spasms of this type may be relieved or aggravated by the test but in any case they are not always present. Similarly, endocrine imbalance such as that discussed by Kaman* may vary or alter radically in relation to the patient's emotional adjustment. Sometimes endocrine treatment may act as a stimulus to restoring hormonal function to normal, but unless accompanied by other treatment it is not successful in the majority of cases.

Some "sterile women" who maintain patent tubes give a history of headache, nausea, fatigue, or even planning weekend trips unaccompanied by their husbands during the period of ovulation. When advised to bring their coital schedule into better accord with their physiological cycle they often report that this is completely impossible. They just feel too sick. These women usually cannot be made to follow rules any more than some patients can remember to take their vitamins or their sulphur as prescribed. Hence, the best prescription in the world accomplishes nothing unless some attempt is made to correct the underlying emotional conflict in the patient.

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* Kaman, G. R.: Psychosomatic Aspects of Sterility, J.A.M.A. **130**: 1215, 1946.

Gynecologists and obstetricians very often overlook the role played by the male in sterility. Husbands of sterile women not infrequently refuse to have a sperm count. The basic reason is sometimes a slight sense of insecurity about their masculinity which is of course aggravated during the ovulation period of a masculine or dominating woman. They sometimes have headaches or take business trips. If the husband can be persuaded to have a sperm count and reassured about it, a change often occurs. Sometimes it is desirable to improve his personal hygiene, perhaps give him vitamins, recheck the sperm count, and tell him that he has improved.

As Menninger[410] notes, vaginissmus or lack of satisfaction in coitus may disturb a woman's physiology. Many women lose their frigidity and/or become pregnant after changing sexual partners, just as many men may regain their potency under similar circumstances. In view of recent work on artificial insemination, a patient may be mentioned who placed the blame for her sterility on her husband's tendency to premature ejaculation. She requested artificial insemination using her husband's semen and had an abortion at three months. Later she tried again but was told that the semen used came from an anonymous donor, although it was actually her husband's. She carried through a successful pregnancy.

In brief it may be said that in the treatment of sterility a careful review of physiological and psychological dysfunction is essential. If the physician first consulted by such patients, through lack of time and training, is unable to do this, psychiatric consultation should be recommended.

Knight[405] discusses several theories of frigidity, two of which are the following:

1. a. Menninger[409] considers the important factors

to be fear of punishment (for violating sexual prohibitions).

b. Unconscious resentment and hates related to a wish for revenge on man, a wish to avenge the mother for the suffering caused by the father, and envy of masculine strength, freedom.

c. Conflicting loves—for father rather than for husband, for women, for herself rather than for anyone else.

2. Three salient features of Rado's[414] theory are:

a. Flight from heterosexuality.

b. Combat—aggressive battling with heterosexual object.

c. Partial adjustment—choice of lesser conflict.

The problem of prophylaxis, Knight feels, is best achieved by providing a proper home atmosphere with security for the child. It is important not to influence a child of one sex toward behavior appropriate to the other sex. He also feels that if the child questions the mother concerning her birth, the facts of delivery, especially the difficulties if there were any, should be explained in simple, nondramatic language.

Treatment should, first of all, be preceded by careful gynecological examination. In case of pseudofrigidity (due to ignorance) sexual re-education is of primary importance. In true frigidity (severe psychic disturbance) psychotherapy should be instituted.

The author has repeatedly observed certain characteristics and trends in frigid women, which—although tentative—reveal a personality pattern.

In the personal data of a frigid woman, one often finds that the patient admired her father in her childhood, but turned against him because he made her feel inadequate. The patient is likely to despise her mother because she does not live up to the ideal of a woman that the patient had set up for herself. The frigid woman usually feels unwanted either because of "something father had done to mother," or because the parents wanted a boy rather than a girl.

The health records of such women are fairly good, except for a tendency to pelvic disorders, and occasionally for abdominal operations. They are likely to have accidents in traffic or with their children. Among frigid women an atypical leukorrhea often develops, which is probably related to the intense dislike of intercourse. Such women, however, are likely to have trouble with their weight; some are overfat; some are overthin; many have had marked changes in weight and figure during the first thirty years of life. They are likely to have small, thin mouths or somewhat full baby lips. Their voices are usually high pitched and nonmodulated or extremely guttural. Their mothers are inclined toward diverse minor ailments.

In their social relationships, frigid women are usually restrained, ill at ease, and feel inadequate unless they are with their inferiors, or they are likely to be flirtatious with both men and women to reassure themselves. Their friends are inclined to lean on them or otherwise find it difficult to tolerate them.

Questioning of these patients reveals that the sexual adjustment is often "said to be good." On further examination this, of course, is found to be not at all true. Their attitude toward the family appears to be superficially good as a cover for a great deal of resentment and a feeling of having been cheated. In their attitude toward children, these women belong to one of two rather extreme types. They need children to make up for the fact that they are not men, and so to justify their existence. Such women often become matriarchs, or they detest their children because they feel themselves forced into a woman's role. Their children are more than ordinarily subject to illness, and are inclined to be polyallergic. Many, of course, manage to have children, but those who do not may develop a chronic or incurable illness instead.

Frigid women like to be the man in the family, but when unable to achieve this, resort to a caricature femininity calling themselves "poor weak women," and "scatterbrained." They are usually very unhappy, but they will rarely admit it until they come to the breaking point, and circumstance or someone else is usually blamed for what breaks them. They have a feeling of loneliness, and are likely to weep if this point is brought to their attention or discussed.

In lower social groups the girls usually get jobs, but give them up as soon as they get married because they feel that marriage incapacitates them. In the higher social groups they are likely to go to finishing school, become helpless, and complain of not being protected and cared for as women.

Their husbands are usually "not as good as Daddy." They themselves are usually of superior intelligence.

These women are subject to hysterical attacks. They often complain of memory difficulties—periods of blackout interrupting a normally efficient day at home or on the job. Very marked masturbation conflicts, accompanied by exaggerated guilt feelings are often present.

A certain amount of conflict concerning the use of stimulants is present. Their interests in sports are likely to be extreme—they either participate fully or hate them. However, they are never good athletes, and their interest is of a "pseudo nature."

The most important experiences related to frigidity are marriage or pregnancy. Some women experience their first orgasm after the birth of the first child. This is true for those women who have an exaggerated fear of pregnancy. In deep-seated cases, however, pregnancy may precipitate the frigidity. There is likely to be a passive acceptance of the condition unless the relationship with the husband is in danger.

Frigid women have a passive-active conflict specifically focused on the sex role. They feel they have been forced to accept one or the other role, and resent this fact. All women are not frigid for the same reason, and at least three types should be borne in mind. First, those who always wanted to be boys, or were told about their parents' disappointment in not having a boy. Second, those who have acquired such an intense dislike and fear of the "feminine role" that they would rather be just neuter instead of being a woman. Third, those who have married men with latent or overt homosexual tendencies. But, from the point of view of background and case histories there appears to be little difference. There are many who might work out and overcome handicaps with an adequate man, but unfortunately they are likely to marry men with analogous troubles.

The psychogenic origin of frigidity is well illustrated by two patients in the author's care.

CASE I.—The patient was a young woman, 27 years of age, whose chief complaint was frigidity. She was married, and had three children—a girl of 8, a boy of 6, and another girl 4 years old. The important features in her personal history are the following:

She was conceived immediately after the death of her young brother, and was supposed to replace him. There was already a girl in the family. The parents were "nice" to her, encouraged competition with boys, which created a feeling of inadequacy in her. After onset of menstruation she discontinued in her attempts to live up to the boy's role, but was "determined" not to develop her femininity. However, she became tremendously competitive in a pseudo-feminine role. She is sexually frigid, and has strong feelings of guilt and disgust in relation to intercourse. She is very fond of the oldest daughter, but resents the boy very much. Interestingly enough, the girl at the age of 8 and the boy at the age of 6 still have enuresis, while the youngest child was completely toilet trained at the age of 16 months.

CASE II.—The patient, 27 years old, previously married and divorced, has two children. She was referred by an obstetrician whom she consulted on the possibility of either her husband or herself, or both, being sterilized because they are both so intensely averse to another pregnancy.

The patient is the youngest in a family of three. Her sister, aged 32 (married and divorced in two months), with a serious heart condition, is very much admired by the patient. The brother, aged 34, is considered as somewhat neurotic by the patient. The patient believes she was an unwanted child, and "hates men who irresponsibly make women pregnant."

She married six years ago at the age of 21, and this marriage was annulled by the first husband on the basis of anatomical unsuitability in coitus, in spite of the fact that during the year of marriage she had an illegal abortion at four months. She has constant nightmares about this, and says repeatedly to her present husband, "Do not be the kind of man who will make me go through that again." During the few months between the annullment of the first marriage and her present marriage, she had a uterine suspension because she had severe menstrual cramps. She said her doctor told her that her cervix was very far down in the vagina so that there was no passage.

The patient blames her difficulty in using a diaphragm on this fact. She said three doctors have told her how to use a diaphragm, and although she inserts it correctly, it becomes displaced. She reports that during both pregnancies "something stuck out of her vagina, and every time, after intercourse, something stuck out"; so she believes that the diaphragm, even if correctly inserted, is of no help. In spite of the obstetrician's reassurance she is convinced that she will become pregnant, and she cannot face this possibility.

She resents her children very much. If both of her children were killed, she would be a little sorry "because I ought to be, but I would be much happier with my husband. The children come between us."

She had two automobile accidents when she was driving, but "neither was my fault." The first accident was a head-on collision in which the patient sustained some bruises. In the second she was sideswiped at an intersection. The only injury was to the car, but her sister, who was riding with her, is not yet recovered from the shock.

Although the patient's husband is in a very suitable financial position, she stated that "If I had another baby, or even an operation, I would have to go to a general practitioner because I couldn't pay an obstetrician."

Although the patient states that she has an orgasm because "my husband sees to it" whenever she has coitus, she has coitus once a month.

She has a small mouth, and a nonmodulated voice, frequently found in a frigid woman who, fundamentally, hates men. Her husband is away a good deal of the time, and she feels very lonely, and has few friends.

Unless the patient receives intensive psychiatric help for her underlying emotional difficulties, the prognosis is very poor. It is quite probable that she will get an abortion or let herself be sterilized, and consequently develop a chronic pelvic disorder and become an invalid.

3. **Neoplasm.**—Little has been added during the last five years to medical understanding of breast, uterine, or cervical tumors, although work in this field is now in progress.* As noted in the earlier literature, patients who develop cancer, as patients with other illnesses here described, tend to resemble one another. Those whose new growths occur in the genitourinary or associated areas (breasts, male and female) represent a sub-

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* See Dunbar: *Emotions and Bodily Changes* for earlier literature.

group similar to the subgroups outlined relative to the accident-prone or cardiovascular disease.

Although more research is needed in this field, it is now the general impression that studies of biochemical and endocrinological aspects of neoplastic development should be supplemented by careful psychosomatic observation. The case histories just cited are arresting whether or not one assumes that physiology or psychology played the major role. Physicians consulted by patients with possible malignancy should be wary of removing a breast or uterus too quickly, although the educational campaign in the direction of early diagnosis and treatment should, of course, continue. The emphasis should be on the best possible early diagnosis and treatment which, where feasible, should include a psychosomatic study of the personality.

Obstetrical Problems

1. Spontaneous Abortion.—Obstetricians are beginning to recognize the existence of an abortion habit in which the emotional factors play a larger role than do external factors as is the case in the cold habit* and the accident habit.* Because of the observation that many spontaneous abortions occur during the third month,' it was once the custom to recommend the avoidance of coitus during this period. Some obstetricians have decided against this prescription, but the number of third-month abortions has not changed materially, probably not at all, if adequate statistics were available. The early months of pregnancy are months of physiological and emotional reorientations. Many patients who have set their hearts on becoming pregnant, once their goal is achieved experience doubts: will it change the relationship with the husband; when to stop working; rent a new apartment with new space; buy maternity clothes.

Many such doubts occur to a woman during the first months of pregnancy and usually there is no one with whom to discuss them except relatives and friends who, instead of letting her talk, tell her stories of "their own awful times."

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* See Chapters XII and XIII.

Patients who acquire "the abortion habit" resemble one another much as do patients with the accident habit, but they are usually somewhat more susceptible to the psychosomatic approach. The abortion is usually blamed on fatigue or packing a trunk or falling down stairs, but when the patient is allowed to talk she becomes convinced somewhat more readily than do the accident-prone that the real reason was something else.

Squier and Dunbar[400] have stated that:

> "Psychosomatic problems in gynecology and obstetrics include dysmenorrhea, dyspareunia, frigidity, some varieties of colporrhea, certain aspects of the toxemias of pregnancy, lactation, the correlation of personality types with the pattern and efficiency of labor, physical and emotional adjustments in the puerperium, and probably some determinants of fertility with regard to conception, as well as to the maintenance of pregnancy. Almost every practicing gynecologist and obstetrician would agree with this statement but too little supportive case material has been analyzed and presented.
>
> " . . . There is reason to suspect that the vacation of an obstetrician may be a valid topic for investigation,—not wholly humorous, either. Some obstetricians take vacations of approximately one month each year. One such obstetrician selected the vacation month according to the least number of patients booked for delivery, but every year the caprice and perverseness of the stork hounded and haunted him *in absentia*. The importance of this problem will be illustrated later in concrete case material.
>
> "One year recently this obstetrician decided to be definitely predictable, in contrast to his patron bird, and to accept no patients whose expected dates of delivery would fall within the selected vacation period. Five such patients came in within the next ten days. To each the vacation plan and schedule were carefully and frankly explained. Four of these patients persuaded the obstetrician to accept them, either on the chance that they would deliver sufficiently early or late for him to attend them, or that they would have prenatal care by him but delivery by a colleague during his absence. All four of these patients spontaneously aborted within the next two weeks, despite the fact that their regimen of living appeared not to have changed. One of the women who aborted was seen in her home at the time. She appeared relieved, promptly recovered from the experience and went along in excellent health for two months. Then she came back for consultation because she had not resumed menstruation. To the amazement of the obstetrician and to the consternation of the patient, it

was found that she still was undoubtedly, and apparently normally, pregnant, gestation having the stage of development dating from the same conception that had preceded the abortion two months previously. Obviously this patient (whose pregnancy was incidental, unplanned and quite unwelcome) had had a twin pregnancy, had aborted one embryo but was proceeding normally in the development of the other. The situation was so explained to her. She left the office somewhat bewildered at about 3 P. M. At 11 P. M. that same evening her husband called the obstetrician and said that his wife was having pelvic cramps, she felt miserable (as did he also), and they both thought that she was having another miscarriage. It was carefully explained by telephone that such a mishap was extremely unlikely in so far advanced a pregnancy, and they were reassured as far as possible. By the next morning this patient had lost all symptoms and fear (or hope?) of miscarriage and thereafter she continued in a normal course of pregnancy. She began labor and was delivered before the obstetrician went away."

Squier and Dunbar, in discussing the two patients described in this article,[400] state:

"1. Both of these patients were of superior intelligence; both scorned their mothers and identified themselves with their fathers; both were frustrated in their careers; both were frigid (although both recovered after adjustment to parenthood); and both were concerned about the sex of the baby. These four factors have been found in a number of other patients who have the pattern of abortion, premature delivery or stillbirth.

"2. Both patients had pathology or a physiological variant, although of questionable significance. In the first case the discovery would not have been made without the appendectomy. In the second case the lesion disappeared without surgical intervention and without the patient's awareness of its existence. The obstetrician commented that this is an interesting example of physiology which often was misinterpreted by the older school of surgeons who relied on, and practiced, extirpation.

"3. Both patients had bleeding and gastrointestinal symptoms, including nausea, vomiting and colitis, during earlier pregnancies, but these symptoms were notably absent in a later pregnancy during psychosomatic treatment.

"4. Whatever may be the internal or external agents predisposing to abortion, it appears from these histories and from other unpublished material that some persons develop an abortion habit, just as others develop an accident habit, and that this habit may be interrupted by well-directed psychosomatic treatment."

By way of conclusion Squier and Dunbar make the following suggestion:

"The obstetrician in this study gained some impressions that probably will be shared by most obstetricians who are exposed to this or similar material:

"1. The province of the consultant in psychosomatic medicine is unfortunately very foreign to most obstetricians. The consultant examines large areas of the patient's emotional and physical functioning which, if even suspected by the obstetrician, have been left untouched, unexplored.

"2. Those areas are related to conception, pregnancy and delivery in ways that are likely to surprise the obstetrician. This surprise may be instructive or may occasion mistakes.

"3. An obstetrician should weigh what he says to his patient. His verbal contact, like that of his mechanical and sterile technique, should not be neglected lest it traumatize her.

"4. There are suggestions that some of the clinical phenomena (such as nausea and vomiting, and some instances of bleeding) which puzzle obstetricians because they do not understand them can be elucidated and relieved by the approach and technique of the consultant in psychosomatic medicine.

"5. Obstetricians should cultivate the psychosomatic approach to their work, and furthermore should seek instruction from and collaboration with those who are already proficient in that technique.

"6. What may be called *psychosomatic obstetrics* can now be discerned only in shadowy outline, but there is promise of substance, precision and great utility in time to come.

"These two cases alone, although the two personalities do have a good deal of similarity, suffice to illumine a number of obstetric points. It is probable that the study of other women of different types would yield rich correlation between the personality and the pattern of labor. Additional cases could be cited in demonstration.

"7. On the basis of material not presented here due to lack of space, it appears that correct psychosomatic management of the mother may influence the neonatal development of the infant. It is of interest, for example, that Mrs. Z's infant daughter created for the attending pediatrician a considerable problem because of colds, nausea, vomiting, and colitis, necessitating diverse changes in formula during the first four months of her life. During these four months the mother continued psychosomatic treatment and came gradually to accept her girl-child and to look forward to another pregnancy. Meanwhile she recovered from her frigidity. Since that time the child has been in the best of health, with no signs of physical dysfunction. The pediatrician, the consultant in psychosomatic medicine and the obstetrician, all have reason to believe that the mother's solution of her own emotional problems was largely responsible for the change in the health and behavior of the child.

"8. It may be added that a new form of cooperation between obstetrician and pediatrician is indicated. A psychosomatically sensitive obstetrician is in a position, by the end of a patient's pregnancy, to pass on to the pediatrician who is similarly sensitive, data (indeed a personality profile of the woman) that can be utilized by the pediatrician in his care of the infant in cooperation with the mother. This bridge of information may be especially valuable if the child is the first one in the family and if therefore this is the first contact of the pediatrician with the mother.

"Observation of the infants described here, and of many others, shows a marked difference in the health record of the child, depending on whether the mother succeeds in attaining psychosomatic adjustment and equilibrium after delivery." *

The author has remained in contact with both patients described and both have carried through subsequent successful pregnancies without any intercurrent failures.

Salerno and Sala[418] have made similar observations and comments relative to personality factors which deserve consideration by the gynecologists and obstetricians.

Their patient, a woman 37 years old, had eight unsuccessful pregnancies during ten years of marriage. The first abortion was therapeutically induced and the other seven were spontaneous. A careful psychoanalytical investigation was initiated which revealed a series of unconscious infantile psychic trauma and obsessional thoughts: the death of a brother during early childhood, "bad milk" from the mother on that occasion, envy of children, and difficulties with her sister-in-law. Her neurotic manifestations became intensified during the various pregnancies. Psychotherapy was initiated in the seventh month of the ninth pregnancy, which was successfully terminated.

In their psychoanalytic interpretation of the case, these authors consider the spontaneous abortion to be essentially in the nature of a conversion symptom.

2. Complications of Pregnancy and Delivery.—Patients, male or female, wishing to become parents, not infrequently develop pseudocyesis.

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* "If a larger series of obstetrical cases were studied the mathematical necessities for the proof of causal relationships and associated phenomena should be indicated under four categories of individuals: (a) Women with good personality adjustment who abort; (b) women with good personality adjustment who do not abort; (c) women with poor personality adjustment who abort; (d) women with poor personality adjustment who do not abort."

Steinberg and co-workers,[421] studied three case histories of pseudocyesis in which there were marked alterations (increased) in the excretion of gonadotropins and estrogens as a result of psychogenic factors. These authors suggested that psychic factors influenced the endocrine system, which in turn caused the various local changes.

Blyth[396] has reported a case of a 27-year-old soldier admitted twice for abdominal distention and vertigo. The treatment in this case consisted of sodium pentothal, and suggestion, after which he recovered and was sent back to his unit, cured. These two case histories illustrate the role played by spasm of the involuntary musculature and the running wild of the autonomic nervous system once inhibition or emotional crisis has released it from cortical control. Management of labor and delivery, including the type of analgesia or anesthesia employed, should be judged with reference to the nervous system and personality then under stress. Many tears will be avoided and more babies will be able to breathe if such a clinical evaluation is made during labor. More specific clinical material which might be relevant here probably belongs in a book dealing primarily with obstetrics.

CONCLUSION

In the somewhat neglected field reviewed in this chapter, teamwork between the family physician and specialist, with or without the assistance of a psychiatrist, may "make all the difference." The forward-looking physician has an opportunity here to shift his focus from an attempt at "death control" to an attempt at "birth control"; that is, assuring favorable conditions for birth and early development for each new member of our population.

CHAPTER XII

INFECTIOUS DISEASES

The ability of the organism to resist infection is dependent on many factors, some of which are known in more or less specific form, others in terms of generalities and still others perhaps not yet surmised. But whatever protection the organism possesses, hereditary or environmental, its total resistance is markedly influenced by its general physiological equilibrium. As Cannon and others have demonstrated, the maintenance of physiological equilibrium is a psychosomatic problem. Emerson[426] said, "The bacteriologist also recently has helped, for he no longer teaches that bacillus typhosus, for illustration, is the 'cause' of typhoid fever. It certainly is the only known specific cause; nevertheless, the chain of etiology of typhoid fever is made up of other links also, and among them, some which he had named 'immunity, resistance, susceptibility,' etc. And these, he knows, the affective psychical states of the patients can easily modify."

The effect on the various organ systems of the physiological changes which accompany chronic emotional tension is discussed elsewhere in this book. In some cases, these changes provide a favorable influence for the growth of an infectious organism. This is commonly seen locally in the skin and gastrointestinal tract. An example of the former is excessive secretion of sweat favoring the development of fungi; and of the latter, persistent spasm of smooth muscle damming up a source of infectious material which might lead to suppuration and perforation. In general, chronic tension reduces resistance to initial infection by causing excessive fatigue. Just how fatigue brings about a reduction in resistance is not known but clinicians have long been aware of the importance of this factor in the prevention and treatment of infectious diseases.

Colds

The usual medical history and examination with its somatic focus is inadequate for evaluation of the respective roles of psychic and somatic components in illness. As stated before, it is only when the physiological and psychological factors are studied together that an accurate picture of the individual patient and a true evaluation of his symptoms is obtained. Whether the psychic or the somatic aspect be considered primary, the real problem is to treat first, the patient, then the disease, and only third, the symptom.

A discovery which cannot be too much emphasized is that advances in bacteriology and chemistry, including the sulfa drugs and penicillin, renew life for only a limited number of sick people, but their effectiveness may be multiplied if the physician understands that the outcome depends more on what the patient has in his head than on what he has in his chest.

It is well known that in epidemics there is always a large percentage of those exposed who do not succumb to the disease. It is said that some people have a higher resistance to infection than others. This resistance, however, cannot be explained always in terms of immunization. Resistance to disease is greatly modified by such factors as fatigue and the general physiological equilibrium of the body.

Experiments have shown that emotional tension seriously limits the ability of the body to regain a stable equilibrium after it has been subjected to stress or injury. There could be no better illustration of this fact than the enormous difference in susceptibility to colds, and in rapidity of recovery among different individuals. Colds are of different types, with different consequences. No adequate scientific description of the cause of colds can yet be given, but it is known that quite aside from physiological susceptibility, there is such a thing as a cold habit, or temporary cold-proneness. No one can escape entirely from exposure to the various agents which produce mortality and morbidity.

It is not usual to apply the psychosomatic approach to infectious diseases. Yet there are certain diseases such as colds and tuberculosis in which the emotional factor may be of considerable importance. Even in illnesses where the exogenous noxious agent has been defined, the factors governing susceptibility and response to treatment remain ill-defined. Since, as yet, every individual cannot be protected from exposure, attention should be focused on ways of increasing resistance to these noxious agents; that is, eliminating the personality factors which make certain individuals particularly susceptible.

Leon J. Saul[432] reported that fifteen patients who had been subject to unusually frequent colds and sore throats before coming to analysis became either free of colds or had them with singular rarity in an average period of three years after completing analysis. In every one of these cases, the patients came because of emotional difficulties and the colds were incidental. No other treatment was given. Psychoanalysts have often found this to be true.

Despert[424] studied colds in young children and makes the following statement:

> "In the case of eight children from broken homes, all with high incidence of colds, there was evidence of gross emotional disturbances in the nature of anxiety and frustration. It is planned further to investigate and analyze the total data, and evaluate the interrelations of psychosomatic factors, but it is already apparent that in some cases internal tensions due to psychologically traumatic situations may be operating among other factors contributing to individual susceptibility to colds."

The general practitioner finding a patient with a cold habit should pay special attention to his emotional and environmental situation. Examples familiar to every physician are the following:

CASE I.—A young married woman of 24, was under treatment for a complaint far removed from colds. In fact, she rarely ever had a cold, but during the course of her therapy she took one which proved to be unusually tenacious. Two weeks passed, and it had not improved. Suspecting the cause, the analyst asked the patient about her relations with her mother-in-law who was visiting in her home. The story came out with a rush. The mother-in-law had intended to stay only a week, originally, but for one reason or another the visit had been extended. Recently she had been increasingly critical of the patient, particularly of her housekeeping and the way she dressed. Out of respect for her husband the patient had choked down her anger, but had gone on seething inside. The cold was the result.

It was suggested that the patient have a talk with her husband, and let him explain the situation to his mother. The mother-in-law's feelings were hurt, but two days after her departure, the patient's cold was gone. Anger had upset the delicate chemical balance in her body, opening the way for the infection which led to the cold.

CASE II.—The patient was a big man who had all the appearances of perfect health, but who always had some ailment, particularly colds. His life was made miserable every winter by a constant succession of colds. During his analysis it was brought out that his mother had been overindulgent with him, and he had grown up to be a very petulant child. As he grew older he covered this petulance with a great show of independence; but underneath he was still the spoiled child wanting everything done for him, He resented the responsibilities of being a husband and father, but he pretended to take everything in his stride. Actually, every responsibility made him secretly angry, and it was the physical effects of this anger that made him an easy prey to the infection of colds. When the analysis released this anger and helped him to adopt an adult attitude toward life, the colds stopped.

CASE III.—The patient was a young married man of 31, employed in a chemical engineering plant as a supervisor. He felt that he was too young for his position, which was an unusually responsible one, and after a few months he began to develop an intense anxiety state with insomnia, digestive disturbances, and—a chronic cold. His condition finally became so bad he was forced to take sick leave, and when his doctor's treatment failed to help him he was advised to consult a psychoanalyst.

The underlying cause of his trouble soon appeared. He had been the youngest child of a large family, and his brothers and sisters had always made him feel physically and intellectually inferior to them. He had responded by trying to beat them at their own game, forced his way through school in record time and, after a few false starts, landed this job with the chemical plant. But he continued to feel inadequate, as he had felt as a child. There were deeper levels, of course, including the anger which he still felt toward his brothers and sisters; but once this was removed in the therapy and his fear of failure dissipated, his health quickly improved and his colds ceased.

CASE IV.—The patient was a married woman who had experienced the death of her husband. She tried to conceal her grief from her children as much as possible, thinking that it would disturb them less if she remained cheerful. The result was that she wanted to cry all the time, a condition which soon led to a severe cold. She had three colds during the following three months, going out of one immediately into another. Her family physician was wise enough to tell her that she was suffering from a case of acute grief, and encouraged her to cry. The prescription worked. As soon as she let the accumulated pressure of grief and loneliness come through, her recovery was prompt and complete.

Such cases as these illustrate the fact that emotions do have the effect of lowering the body's resistance, and that colds often result; but the question of how this effect comes about is a difficult one to answer. As it is understood now, an emotional state can increase susceptibility to infection in three ways: first, by producing diverse muscular tensions and fatigue; second, by increasing or decreasing blood supply and glandular secretion; third, by changing metabolism and chemical balance.*

Therapy directed toward interruption of the cold habit should include education of the patient in use of the more effective drugs immediately after exposure or recognition of the first suggestive symptom. While such first aid is being applied, the patient's emotional state prior to onset should be ascertained and evaluated in view of past somatic and behavioral responses to inner and outer stimuli.

Pneumonia

Everything that has been said about the susceptibility to colds and the cold habit applies with equal force to bronchitis and pneumonia, but there are qualifications —physical and psychological. Of course, pneumonia is somewhat modified by the organism or virus involved. Other things being equal, patients who succumb to pneumonia are usually found to be under particular emotional stress. It is perhaps interesting that the type of mother usually described by the patient with tuberculosis often has a history of one or more types of pneumonia, and when these mothers die of pneumonia, the son or daughter frequently acquires a cold, influenza, pneumonia, or even somewhat later, tuberculosis.

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* Fabricant, Noah R.: *The Common Cold and How to Fight It*, Chicago, 1945, Ziff Davis Co.

Lindemann[431] suggests that the relatives of patients who die suddenly should be given a careful check with a view to possible prevention of future illness. The fact should be borne in mind that not only colds but acute deaths of all kinds are emotionally contagious. The latter have a profound effect on the physiological behavior of close relatives and friends and in addition may be suggestive of the type of illness they develop during such crisis periods. For example, the death of a mother from a pneumococcus pneumonia would not be expected to predispose a child to tuberculosis, and yet, the tensions created combined with focus on lungs appear actually to increase susceptibility.

It is well known that there is a correlation between temperature and pulse rate. If fear is removed in a patient suffering from pneumonia or some other illness, both pulse and temperature are likely to go down, and the heart is protected.

Tropical and Other Diseases

There have been some studies of tropical diseases showing that just as people with different personalities and difficulties are more or less susceptible to colds, so certain people succumb more or less readily to any given parasite. Furthermore, people harboring a parasite are made more or less ill by it depending upon the pre-existing personality structure.

There will be more material in this field within the next few years, but attention may be called for the time being by way of illustration to brucellosis, concerning which Evans,[427] Griggs,[428] Harris,[429] and Horn,[430] among others, have written. Horn speaks of chronic brucellosis as a cause of major neurasthenia. Harris treats it in more detail as a psychosomatic problem. The author has seen several such cases and in general, they are resistant to a psychosomatic approach by the general physician, sometimes even to briefer psychotherapy. In several instances, the physiological and behavioral picture has been strikingly improved by psychoanalysis. There are notes here and there that such patients show paranoid trends. In those that have been given careful study, however, there is evidence that these trends antedated the acquisition of the parasite.

From an article entitled "Tropical Diseases and Geopathology," by Francis R. Dieuaide,[425] the following statements are quoted:

> "It was a foregone conclusion that in the great war . . . our Army would suffer from tropical diseases and would have dire need of doctors with sound knowledge of tropical medicine. It is to be hoped that the experience will be thoroughly described, but such an end will not be easily or soon attained. . . .
>
> "The term 'tropical medicine' is convenient and serves certain purposes, but as generally used it does not correspond to a field of medicine that rests on any serious etiologic, pathologic, or clinical principle. It has only a feeble and inaccurate geographic significance, meaning at best diseases not now common in either Western Europe or North America (and often failing to stay within this definition).
>
> "In spite of all this, there are fundamental concepts and problems which are adumbrated in tropical medicine. These are the peculiarities of disease in relation to topography, climate and the distribution of pathogenic and disease-transmitting organisms. Such subjects are part of pathology and also part of that aspect of biology known as ecology. Inter-related in many ways are the effects of social conditions as they occur in various regions, of regional food habits and food supplies, and perhaps of hereditary racial traits. The peculiarities of tropical diseases and the subject of tropical medicine are fragmentary portions of this great field, the significance of which far transcends that of any selected group of specific diseases.
>
> "Unfamiliar terms are always objectionable. Nevertheless, a new and important field calls for a distinctive and adequate name. Perhaps the term 'geopathology' is the best that can be found to designate the subjects under discussion.
>
> "Brief reflection shows that geopathology, as here defined, is a subject of great practical and scientific importance. Studies in this field should be concerned not only with specific diseases (and *a fortiori* not only with specific parasites), but with regional peculiarities of all diseases. The peculiarities in certain areas of pneumococcus pneumonia, tuberculosis and rheumatic fever, though yet poorly known, are striking and suggestive. Moreover, the field is not limited to communicable diseases, but extends in all directions."

In the treatment of patients suffering from an actual infection or parasite, the first emphasis should be on understanding the factors involved in their susceptibility to the illness and on increasing their resistance to the illness. Most well-trained physicians could do this were they willing to take the time; but any physician who wishes to limit his practice to diagnosis and prescription should consult a specialist who has training and time to devote to adequate diagnosis and treatment.

CHAPTER XIII

DISEASES DUE MAINLY TO EXTRINSIC FACTORS

Physicians dealing with broken bones or specializing in major surgery used to have a relatively easy time. They were skilled technicians; anything the patient needed beyond a skillful operation was left to others. Then, insurance companies and industrialists began to call attention to the personality factor as a cause of accidents and sometimes of such apparently necessary operations as appendectomies and exploratory laporatomies. Diseases previously considered mainly due to external agents were seen to be in part occasioned by the inner life of the patient, and the response to anesthesia and recovery from operation mainly determined by intrinsic factors. Harvey Cushing and others who have written about the history of surgery have stressed the difficulty with which newer and better surgical and operating room techniques were accepted. Likewise, application of psychosomatic techniques in surgery has been slow. But it is now known that they help to explain why, subjected to similar procedures, some patients die and others recover.

Accident Habit or Proneness

A study of the personalties of patients in conjunction with their illness histories, and even with subsequent Army casualties or industrial accidents, indicates that very few accidents or illnesses are solely the result of external agents, as is illustrated by the observation that 330 similar accidents result in only one major injury. Even hereditary predisposition seems not to be the major cause. The role played by heredity can be argued, but heredity cannot be changed by the patient or by his physician. However, susceptibility to illness and resistance to injury from the environment can be modified to prevent much chronic illness and most epidemics.

Until recently accidents have been considered to "happen by accident," and the surgeon was content to set the bone and treat the accident as an isolated incident. But it has been discovered that there are people who are accident-prone; that is, when they are emotionally upset or their habitual defense against (or way of dealing with) their fundamental conflict is no longer feasible, they are likely to have accidents.

Since nearly 10,000,000 civilians were killed or injured in 1944, and since at least 4,000,000 of the 50,000,000 workers in this country are killed or disabled every year, susceptibility to accidents ranks high on the list of unsolved problems confronting medicine today. The National Safety Council since 1913 has waged an increasingly efficient campaign for improving safety devices and for familiarity with them and has, as well, developed an educational program on the basis of the kind of unsafe acts which result in accidents. The Council estimates that, in spite of this effort, in all these years it has saved less than 1 per cent of the total deaths yearly from accidents. If would seem to be indicated, therefore, that something more than safety devices and educational programs is needed to reduce the accident rate.

If studies made over a period of ten years by insurance companies, the National Research Council, and the Industrial Research Board of Great Britain are right in reporting that 80 to 90 per cent of all accidents are not due to defective machinery, physical or mental defect in the sufferer, or to lack of skill, but to an *x factor* in the personality involved, the nature of this x factor becomes a matter for major concern.

Some ten years ago the National Research Council set out to investigate the x factor as it appeared in commercial drivers of four large utility companies. No way was found at that time to distinguish, either by physiological or psychological tests, the driver with the high accident record from the total group of commercial drivers. But a shift of 5 per cent of the personnel with the highest accident records to other jobs reduced the accident rate by 80 per cent, or to one-fifth of the original rate. Nevertheless, this 5 per cent of the employees who were shifted to different jobs continued their high accident records, no longer through driving cars, but through slipping, falling, shutting fingers in doors, or in other ways, either at home or in going to and from work.

In 1941 the total cost of accidents was approximately $4,000,000,000, according to the report of the National Safety Council, and in 1944 it was estimated at nearly $5,000,000,000. All of this indicates that there are accident-prone persons among us and that they constitute a health risk to themselves and to other people, which cannot be dealt with adequately by way of education or by improvement of the machines they use. Home accidents killed 32,000 civilians, and the total of injured was nearly 5,000,000. Costs reached $6,000,000.

What do we pay for disregard of the psychic component in illness? Unfortunately, in spite of our elaborate and expensive surveys of the costs of medical care and of the adequacy of medical care throughout the nation, we have not bothered to find out.

Through little fault of ours, clues have been offered us here and there which it may be well to examine. The following are examples:

Fifty years ago deaths by violence (accidents and suicides) accounted for less than one-tenth of 1 per cent of the total mortality in New York City. In 1936 they caused 6.5 per cent of these deaths. They account for well on to one-tenth of the disability on any given day. We have been too ready to ascribe this to our increased use of dangerous machinery, including motor vehicles, but this idea has been discredited by scientific observation. There has been similar information relative to all but two of our ten major causes of morbidity and disability.

Everyone is exposed to certain types of injury from his environment. Public health services have obtained some control over bacteria; the National Safety Council is attempting to make machines less dangerous; and economists are trying to plan a society which will be less harmful to the persons who live in it. The physician, because he cannot control such factors as these, is forced to focus his attention on repairing the damage created by them. The discovery that the patient himself can assist in this process, not merely by taking pills and *perhaps* following directions, but also through an understanding and changing of behavior patterns which may have increased his susceptibility to a given illness, or may have caused it, is a great addition to the physician's armamentarium. Much has been done in the last decade to increase physicians' awareness of the emotional component in illness.

The application of the psychosomatic approach to illness syndromes has resulted, not only in the development of better diagnostic and therapeutic techniques for dealing with a number of the most baffling of them, but also in the discovery of new syndromes such as, for example, accident-proneness.

Social, military, or industrial reorganization* during the last decade has resulted in increased attention to death by violence (mainly accidents). Persons who have investigated this problem in such diverse manners as those of the insurance agent, surgeon, or employer have arrived at strikingly similar conclusions.

While these things were being learned by experts in the field, the victims of accidents have been thinking their own thoughts, although their awareness of the role played by emotional factors is recorded in language less dramatic than that referring to cardiovascular and gastrointestinal diseases. All of us use such expressions as "I'd rather have broken a leg than have this happen"; "I nearly broke my neck to catch the train"; "His nose is out of joint"; "I was so surprised I nearly fell off the chair"; or "I almost broke my back getting the work done." All too often we use these phrases without attention to their meaning.

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* Dunbar, F.: *War Medicine*, 4: 161-175, 1943.

There is a difference in emotional tone of these idiomatic expressions as compared with the organ language of the cardiovascular system. First of all, there is always an external reference with the implication of somewhat violent physical damage as a result of careless or impulsive action. The simple observation supplies a clue, long unheeded, to the understanding of accident-proneness.

It has been discovered that there are people who are susceptible to accidents; that is, when their emotional balance is disturbed, or their habitual defense against their fundamental conflict is no longer feasible, they are likely to have accidents. The psychosomatic approach is essential in dealing with this problem even though the mechanisms involved—physiological as well as psychological—are of a different nature from those encountered in syndromes such as hypertension or peptic ulcer, where the vegetative system plays a relatively greater role.

Industrial and insurance companies attempted to cope with the accident problem by excluding workers with a history of accident habit. But this method proved unsatisfactory; first, because there are too many of them (one out of every four or five employed); and second, because a person may be accident-prone and apply for insurance before his accident habit has developed. The handling of this problem is inadequate. There are many people who are accident-prone only for the moment or only for a brief period of time, whose injuries may have resulted from factors completely beyond their control. Hence, there is immediate need of a basis of distinguishing the accident-prone persons more accurately than is possible in terms of the accident history.

Setting the broken bone or talking to the accident victim about being more careful is no more effective in curing an accident syndrome than is the common method of dealing with peptic ulcer. It is usually not difficult to heal the ulcer, but talking to the patient whose ulcer has been temporarily healed about what he should eat and how he should live does not eliminate the ulcer syndrome. It is generally admitted that ulcer is a chronic disease which will recur from time to time as long as the patient remains an "ulcer personality," and the same is true of the patient with an accident-prone personality.

It is important to remember that accident-prone persons injure not only themselves, but others. In war the man who forgot to push a button when the submarine submerged might have caused the death of an entire crew, to say nothing of the destruction of a costly ship. In domestic life he may injure other members of his family. Infants frequently are victims of accident-proneness in their parents. In the United States it is estimated that one infant under one year of age dies from an avoidable accident on the average of every four hours. Accident prevention, then, becomes a major responsibility for the successful physician or public health officer.

During a fourteen-year study of serial admissions to a general hospital of patients with cardiovascular disease some clues were obtained almost fortuitously relative to the personality which is likely to be accident-prone or to develop the accident habit. Because cardiovascular disease outranks all other illnesses as occasioning mortality and disability, and because medical understanding of its cause is inadequate, it was decided to study the personality as well as the clinical course of all patients between the ages of 15 and 55 admitted to the hospital. Since the scientific investigator likes to have a control group, the patients on the fracture ward were selected for comparison as probably being more representative of the healthy population than any other group in the hospital. As the study progressed it became evident that these patients had too many personality traits in common to be considered a control group, although their personality profiles proved an enlightening contrast to the personality profiles of patients suffering from other illness syndromes.

One significant trend in current comments on the problem of major chronic psychosomatic disorders is toward the realization that in this field one label quite frequently covers several distinguishable syndromes. Diabetes, rheumatic fever, and hypertension used to be considered single disease entities. Now we speak of different types of diabetes, different types of hypertension, and different forms of rheumatic disease. Likewise in the study of accident patients a single personality stood out as characteristic and the first comments published on the personality of the accident-prone were largely colored by observation of this one clear-cut type. A number of persons originally considered as typical were subsequently discovered to belong to one of two other clearly distinguishable subtypes of personality.

The highest accident record, and fortunately the most easily diagnosed, occurs in Type B personality group, comprised mostly of males. This is the type that colored the original profile of the accident-prone. Type A, comprised mostly of females, is more difficult to diagnose and has a lower accident record, except for the males in this group, whose record is very high. Type C, a somewhat smaller group, which includes a relatively small percentage of women, is the least clearly defined. In order to indicate the difference among the three types, and also to show how clearly the three as a group may be distinguished from the profiles of patients suffering from other syndromes, the profile for patients with coronary insufficiency is reproduced in a parallel column."

Susceptibility to Accidents.—The somewhat abstract description of the life situations of patients with the accident habit may be made more concrete by the following case history excerpts:

CASE 117.—A married man, 31 years old, was admitted to the hospital with fracture of the left tibia and fibula. His first statement was that he had slipped on the ice while hurrying to work. Later he stated that he had been out of work for about a year and was looking for a job.

He had always disliked job-hunting, and he dreaded it particularly at this time because he had been trying to keep from his wife, whom he feared, the fact that he was out of work. If the interview to which he was on his way were to prove a failure he felt that he would be able no longer to keep his unemployment a secret. He said: "The only good thing about the accident was that it kept me from having to tell my wife that I couldn't get a job." The accident prevented his being turned down again and having to confess his failure to his wife.

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* See Dunbar: *Psychosomatic Diagnosis*, New York, Paul B. Hoeber, Inc.

When seen for a follow-up many months later, he said: "If I had not been out of work that accident would never have happened."

CASE 123.—A Roman Catholic woman, aged 24 years, married about a year, was standing on the steps of her house on the way to confession, wondering whether she should go back for an umbrella. She was seriously worried about having to confess her use of contraceptives. "For no reason I can think of, I simply fell down the steps and broke my hip." She added: "But it was a relief not to have to go to confession. I know that Father either would not give me absolution and I would be damned or I would have to have a child; you have to go to a hospital with a child, and that would be worse because they save the child and kill the mother. This way it's only me they're interested in." (Although this was the first accident requiring hospitalization, she gave a history of many minor injuries.)

The following case history is a characteristic one which may serve to show the relationship between the personality profile and the patient with an accident habit.

CASE 74.—A separated, unemployed Polish-American truck driver, aged 28 years, was admitted to the hospital for non-union of fracture of the shaft of the lower third of the left humerus, ankylosis of the ulna, radial palsy with repair of the left radial nerve.

The patient's mother died of "flu" when he was nine years old and his father died from "alcoholism" three years prior to the patient's admission to the hospital. He was the second child in a family of seventeen brothers and one sister, and he had not kept in touch with any of them. He said that his parents were too strict. "Until I was 18 I could not sit down because I was beaten so much. When Mother died it didn't help much because my stepmother was just about as strict. At 19 my father licked me for going on a straw ride. He told me to stay away from girls until I was 25 or 30 (that was the age at which he got married) and then I left home because I couldn't take orders any more. It was the same way in the Catholic school; I was always getting licked; I would take my licking and go out and do it anyway."

The patient was married at the age of 21, but he never got along with his wife because, he said, "She was Protestant and I was Catholic." She took him into court several times on the grounds of nonsupport, but always he was able to convince the court that because his arm had been "out of commission" ever since he was married he could not do anything toward her support. His health record was excellent.

At the age of 17 the patient broke off the second finger of his left hand in a machine. A year later he fractured his left arm when he fell out a second story window. Then he twice fractured the same arm when driving a car with his elbow out the window. His present admission to the hospital was for the second of these fractures for which he had previously had eight open reductions and had been treated in nine different hospitals in New York and New Jersey. In the meantime there had been two more fractures of the same arm as a result of "picking up things that were too heavy." After discharge from the hospital he refractured the same arm while riding in a bus with his left arm on the window sill.

Unlike many of the accident patients, he had completed the educational unit undertaken, grammer school. However, it had not been necessary for him to stop his education then. His family had urged him to continue, but he stated that it was only because of them that he went as far as he did. He said: "Then I rebelled and went to work as a carpenter's assistant. Pretty soon I left my job and became a mechanic's assistant. Then I became a boxer by profession [he was classified as a third rate in the middle-weight class], but I have had all sorts of odd jobs driving trucks to make money." He continued: "I don't know what's the matter with people; I could never get along with the boss so I never worked for the same one for very long at a time." The patient's income was good, but irregular.

He liked to talk about his exploits as a prize fighter, as well as about his many close shaves and accidents in driving cars.

He was very scornful of his father's precept about avoiding girls "before you're married and being faithful to your wife." He saw no relationship between "sex, which was natural, and marriage, which was unnatural—really invented by the priest."

It is clear from the patient's story that in any situation involving emotional tension his impulse was to do something reckless, to run away, or to forget about it. He said: "I never do what I'm told and I never change my habits." Like the typical accident patient, he gave a long history of lying, stealing, truancy from school, running away from the family, and so on, for which he was punished regularly without effect.

The first injury to the arm occurred immediately after the patient had introduced his brother to the prize fighting business. The second injury to the arm occurred shortly after his marriage, when he had been berated by his wife for not supporting her adequately.

While in the hospital the patient said: "If it don't heal, take the whole thing off; maybe it's lucky that this ended my career as a fighter. I never was as good as I wanted to be and what made it worse was that my brother turned out to be a better fighter than me."

The patient spent most of his time in one hospital or another and showed little interest in recovering or going to work. He was preoccupied with the problem of collecting for his injuries, but in this he was not successful. There was some suspicion that his frequent refractures and the failure of his arm to heal were somewhat influenced by this preoccupation.

It is clear that this patient was always in conflict with authority. He left home, school, his various jobs, and even his doctors, because of quarrels. His typical reaction was to avoid submission and to assert his independence. This may be considered a representative case of Group B.

In the study of the 1,600 patients which led to the development of the personality profiles for the accident-prone, there were only 20 per cent whose profiles were found to differ in any major respect from those charted. About 80 per cent of these latter patients suffered from two or more major syndromes in addition to the accident habit, and they did not have the excellent health record pointed out as characteristic. In patients with a combination of accident habit and diabetes, or accident habit and rheumatic fever, there is in some instances a blurring of the profile, but more frequently there is indication of a shift from one type to another during different periods in the life history. Further experience with the use of the personality profiles for diagnostic purposes and as a basis for therapy probably will result in a simplification of them.

It is clear from a brief review of these personality profiles that two important diagnostic points are the sphere of life in which the patient had his major conflicts and his characteristic means of reaction and of attempting to solve these conflicts. The area of focal conflict of patients with the accident habit, like those suffering from cardiovascular disease, is in the realm of authority, but, unlike the patient with cardiovascular disease, the accident-prone patient's characteristic reaction to his conflicts, or manner of dealing with them, is to strive for independence and autonomy outside authority relationships and to avoid conflicts with authority whenever possible, although not by submissiveness.

Psychodynamics of Accident-Proneness.—Any dynamic formulation relative to the profile of the accident-prone personalities should begin with an investigation of the nature of their defenses. By focusing their values in immediate concrete experience, by striving to find satisfaction and security outside the authoritarian hierarchy, and by avoiding any marked submission or domination in vocational or social roles, accident-prone persons get along without serious conflicts with authority. The defenses work most of the time. When thwarted, deprived, or subjected to unusual strain, such as unemployment, or the pressure of a mother-in-law in the family, these persons "do something" to modify the situation, or they get away from it, instead of keeping their anger bottled up inside as do those suffering from cardiovascular disease. It is significant that accident-prone persons have a health record far above the average.

When the characteristic defenses fail, and conflict with authority becomes unavoidable, the accident happens; that is, aggressiveness breaks out in an impulse to punish both the individual himself and those responsible for his frustration. Unlike depressed people who consciously attempt suicide, the accident-prone person usually reports no conscious premeditation. It is interesting, however, that occasionally he reports a dream or a "hunch" that "something was going to happen today," or that he "was going to have bad luck." This trend is illustrated by the statement so frequently made by these patients after the accident has happened: "You can't get around fate. I got mine today; you'll get yours tomorrow."

Diagnosis of fracture patients involves careful attention to the problem of whether the accident was purely fortuitous. In this the personality profile is particularly useful and it is important as well to elicit spontaneous statements from the patient as soon after the accident as possible. Brief psychotherapy may reduce pain and hasten recovery by relieving feelings of guilt and thus reducing muscle tension.

Difficulty is presented by these patients because they quickly lose interest in emotional factors as soon as they begin to feel well, and they tend to focus attention on the injury itself. Therapy, like the fracture, is accepted by the patient as a form of punishment and when the punishment is ended by the healing of the fracture he goes on his way with little interest in gaining insight. Again he dons his armor of characterological defenses.

Another obstacle in the treatment of fracture patients is their effort to avoid authority, personified in the hospital by the doctor, and their habitual mode of relieving tension by action rather than by verbalization. The approach of the physician must be adjusted accordingly. Particularly to be avoided is excessive spoiling or severity, either of which encourages resistance and delinquent tendencies, just as in a child. Special attention must be devoted also to secondary illness gain in these patients. Whether or not they are conscious malingerers, roughness or ultra-strictness defeats its purpose. Yet self-defeating behavior must be distinguished from fate.

Summary.

1. Although it is not customary to think of accident-proneness as an illness syndrome, the relevance of the psychosomatic approach in dealing with fracture patients is indicated in the foregoing material.

2. Since accidents are a major cause of mortality and labor wastage, and inasmuch as safety devices and educational programs, although necessary, have failed to solve the problem, and since much of the time of every practicing physician is devoted to the care of accident victims, responsibility for prevention of accidents as well as for treatment of the accident victims must be assumed by physicians.

3. Personality profiles have been reported which have proved useful in diagnosing accident-proneness. No doubt these will be simplified and further defined by future research.

4. An adequate clinical picture of the accident syndrome is extremely important, not only for purposes of

diagnosis, but also for prevention and therapy. Obviously, intensive psychotherapy is not available to everyone who needs it, and not everyone needs it. The physician not trained in psychiatry may find the personality profiles useful as an aid in determining what kind of questions to ask the patient, which emotional problems should be approached first, and what not to do in his general therapeutic management of the patient. Too often if a mother-in-law or a sexual problem turns up, the internist or surgeon with a little knowledge of the psychosomatic approach concentrates on this and he fails to realize that, while he may make the patient happy by listening, he will be unable to do anything effective in curing the accident habit unless he attempts to deal with the fundamental problems of his patient—the area of greatest sensitivity of the individual and his methods of attempting to resolve his conflicts. In other words, many times the clues provided by an understanding of the x factor in the accident personality, will prove particularly helpful to the physician who is not trained in psychiatry.

Operation Habit or Proneness

Some physicians wearied by their accident-prone patients have coined the term "compensitis," to describe these patients' behavior. Some surgeons after having removed almost every removable part in a given patient who then returns complaining of adhesions have been forced to the conclusion that they are dealing with "neurotics" and have nicknamed them "polyoperationitis." Actually, many patients do have pain referable to spasm or organic damage and think that they need an operation more or less as the tuberculous patient needs his illness to help him conquer his passive tendencies.

There is little literature which goes beyond statement of such general observations as those just summarized. The general practitioner when consulted by a patient whose history suggests an addiction to operations should follow the general principles of diagnosis and treatment outlined in other chapters and summarized in Chapter XVI. It is usually easier to remove the need for operations than it is to remove the need for accidents.

When an operation is really necessary, the meaning of the operation to the patient should be studied pre- and postoperatively. Many children, for example, subjected to legitimately indicated tonsillectomy develop rather complicated neurotic patterns postoperatively, and many adults subjected to legitimately indicated thyroidectomy become psychotic or die of hemorrhage postoperatively because of inadequate pre- and postoperative care. The most modern surgical technique as applied by the most skillful surgeons is often insufficient to prevent such terminal results.

Chronic Illness

Since this section is essentially a comment on other material already presented, discussion will be limited to a few general remarks. Review of literature* and illustrative case histories will be found elsewhere.

The fact should be borne in mind, however, that most of the chronic diseases have their place here, as inadequately evaluated from the point of view of cause, treatment, and prevention.†

Until scientific knowledge is further advanced, the best results are obtained by concentrated attention to emotional conflicts sometimes with the aid of palliative drugs. But the physician who really wishes to keep his patients well should not rely on drugs alone and should perhaps place additional emphasis on the more modern psychosomatic techniques.

CONCLUSION

The illness syndromes usually listed as due mainly to physical agents or extrinsic factors have been *inadequately evaluated.* More recently identified syndromes have been discussed here but the principle has a wider application. Whether or not an exogenous agent is involved, the psychosomatic approach is essential in diagnosis, determination of procedures, and management of convalescence. Even where damage has occurred, it is a major asset in the prevention of recurrence.

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* Dunbar, F.: *Emotions and Bodily Changes*, ed. 3, New York, 1947, Columbia University Press, pp. liv-lviii

† Ibid., pp. 52-58.

PART III

CHAPTER XIV

INTRODUCTORY: DISTURBANCES IN FUNCTION

Although there has been a recent trend toward treating functional disturbances as a brief introduction to a discussion of "the more familiar illness syndromes," an argument could be presented for focusing every chapter on this subject. First, nearly every illness syndrome that claims first rank as a cause of mortality or morbidity is complicated by what we like to call functional or personality disorder, and second, the physician who is trained to diagnose and treat such illnesses psychosomatically will find himself in a better position to understand neurotic behavior or actual neurosis in his patients.

Lewin writes*:

> "Since it is the ambition in psychosomatic research to discover the psychopathology of illness wherever it may exist, the psychoneuroses and their study have come to occupy somewhat the same place held by pathological anatomy in the medicine of some thirty years ago. It is in the study of the neuroses that the psychological processes in disease are to be found 'in pure culture'—a term that may be used advisedly, since psychology is too often thought of as replacing bacteriology as a central etiological study. In psychosomatic approach to medicine, as in psychoanalysis, the shift in interest is to the live patient; so that the doctor's main curiosity is no longer focussed on the final result of a set of disease processes, in other words, on what does the autopsy show. Rather he is interested in the way disease affects life in its most typical

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* See Chapter XV, "The Neuroses and their Accompaniment in Physical Dysfunction."

living manifestations. Which means physiological changes accompanying diverse types of experience.

"In a broad way, the psychoanalytic study of the neuroses historically took this course from the autopsy room to the busy world outside. The first neurosis to be studied was conversion hysteria, the symptoms of which simulate organic illness, where anatomic theories had been vainly applied. The second neurosis was anxiety hysteria, the phobias, which forced the problem of anxiety into the center of the picture. The psychological understanding of anxiety had to replace the simple mechanical contributions of physiology. Finally in the study of the compulsions and obsessions, psychoanalysis could free itself from the autopsy room and the laboratory traditions, and focus on the purely psychological. For, though a conversion symptom resembles an organic one, and anxiety has marked functional physiology, the obsessions and compulsions have defied any possible anatomic-physiologic speculation. The specious, pseudo anatomy and physiology attributed to many neurotic states here completely failed to make sense. In the so-called character disorders which turned up for psychoanalytic treatment this was equally the case. The psychoneuroses are best explained in psychological terms, and the often intricate seeming terminology of psychoanalysis is only an evolution of ordinary psychological understanding. Such terms as repression, identification, displacement, and the rest are useful words in psychoanalysis. They stand for mental processes found in daily life, where they tend to pass unnoticed; the same processes are seen strikingly in dreams; and it is impossible to give an adequate account of the neuroses without them. Psychoanalytic terminology arose from practice, and one of the main criticisms leveled against it by academic psychologists is that it has stayed too close to its clinical origin. The terms were invented to describe new facts that were turned up during analytic procedure, and their usefulness is their usefulness in the final justification."

Today when so much of the unknown is mentioned or partly described in medical literature through the use of such terms as psychogenic, idiopathic, neurotic, the impulse of psychiatrists and psychoanalysts to find more precise and more helpful terms for baffling illness pictures should probably be encouraged. Much of the material in Osler's textbook which appears under such headings as hereditary and familial diseases or idiopathic hypertension or epilepsy is purely descriptive. Little light has been shed on the actual psychological or physiological processes involved, and hence there are few terms useful in describing mechanisms. While it is true that almost everything that is understood can be described simply, it is also true that a brief definition which defines a process saves time. Unfortunately most of the long words used by physicians are complicated and descriptive rather than definitive.

CHAPTER XV

THE NEUROSES AND THEIR ACCOMPANIMENT IN PHYSICAL DYSFUNCTION

BERTRAM LEWIN, M.D.

Conversion and Conversion Hysteria

The conversion symptoms are somatic expressions of a psychological state, namely, of a repressed genital impulse with the thoughts, ideas, and memories attached thereto. The symptoms are protean, and for the well-known list ranging through all the organ systems and through all the functions of the body, the reader is referred to any standard textbook of neurology and psychiatry. Freud introduced the term "conversion" to indicate that a psychism had been translated or converted into a somatic expression. The role that the body plays in these phenomena is often difficult to understand. While certain hysterical heart symptoms obviously use the familiar vagal and sympathetic nerves in their symptom production, other symptoms baffle the physiologist to date. The hysterical paralyses are completely uncoordinated with any nerve tracts; the anesthesias have no relation to any peripheral nerve or central nervous distribution. The convulsions differ completely from epileptic grand mal.

Indeed, the only sense that can be made of the hysteric symptoms is a psychological one. A hysterical blindness reveals itself as meaning that the patient does not—or did not—wish to see something. Hysterical paralyses have been traced to forgotten events where the affected limb went to sleep. The convulsions resemble sexual experiences. In fact, properly traced through the method of free association, the conversion symptoms are always found to be representatives of a sexual wish and at the same time a sign of its repression from consciousness. Sometimes the simplest questions will bring out the cause of the symptoms; sometimes only a long psychoanalytic treatment.

During a routine physical examination an interne found that a patient had a patch of anesthesia over the chest, which the patient had not noted himself. Questioned by the physician, he could give no explanation at the time. A day later he said that he had been thinking over what the doctor had asked him and that the anesthesia had disappeared. He had recalled that his sweetheart, who had left him some months previously, had always put her head on his chest just where he had had the anesthesia.

Similar factors may operate in a somewhat different psychodynamic way to originate changes in an organ system. In some patients we find that several mechanisms may be operating at the same time.*

The interne had effected a "cathartic cure," without particularly intending to. The little anecdote shows several cardinal facts about the conversion symptom. It arises as a sign of a sexual repression; it persists while the memories (or ideational content) attached to the sexual wish are repressed and forgotten; it disappears when the memories are recovered. Conversions are not limited to clinical hysteria. They can be produced, and made to disappear through hypnosis. Besides the simple conversion symptoms, this principle also applies to more complicated symptoms, including trances, fugues, and other states with considerable mental content, of which the most bizarre are perhaps the so-called double personalities.

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* Cf. Dunbar: *Emotions and Bodily Changes*, New York, 1947, Columbia University Press, pp. 78-79.

Very few concepts need to be added to ordinary psychological language to formulate the mechanism of the conversion symptom. The role played by the body is expressed in a phrase which is essentially a confession of ignorance: "somatic compliance." A sexual wish is said to be repressed by the ego into "the unconscious," where, though forgotten and inaccessible to consciousness, it persists. The symptom is considered a disguised breakthrough from out of repression of this same wish; a disguised expression or wish-fulfillment. The sexual wish that is repressed is uniformly genital—an important point, as in some other neuroses perverse wishes furnish the unconscious motives for the symptoms. Psychoanalysis recognizes two kinds of repression: the primal repressions of infancy, and later repressions associatively connected with these. Repression is one of the main *defense* mechanisms of the ego, of which there are several other kinds, more clearly seen in dreams and in other neuroses.

Besides repression a common defense mechanism, which plays only a subsidiary role here, is known as identification. The conversion symptom may be at the same time an identification with some other person, always one who figures some way in the sexual life. Common among these are the gastrointestinal disorders of husbands during their wives' pregnancies, while they are in conflict with their sexual impulse. Often the "psychogenic" illness of a patient will simulate a "true" organic illness of a loved one; a common example is the heart neurosis that simulates the coronary or valvular disease of a near relative.

The process by which a conversion symptom arises is diagrammatically the following: sexual impulse (from the id or unconscious)—conflict—counteraction of the ego, repression—breakthrough from repression—somatic compliance—conversion symptom.

In many illnesses at one time thought to be purely "organic" in etiology, it has been found that much of the theory and technique arising from the study of hysteria has a direct application. This is true of certain diseases of the joints and skin especially where, though continuously organically affected, and with true lesions, the symptoms (such as pain, itching) are entirely understandable in terms of the ego conflicts of the patient. They can often be cured or mitigated by psychological therapy. The reader is referred to previous chapters in this synopsis.

Anxiety Hysterias

The anxiety hysterias are the very frequent morbid fears or phobias. An anxiety hysteria may have one central morbid fear, such as that of open places (agoraphobia), of closed spaces (claustrophobia), of certain animals (cats, dogs, snakes, butterflies); or the phobia may be limited to certain more restricted loci and topics (street fear limited to one or two avenues, fear of pictures of an animal, of seeing a certain person). Several fears may, of course, occur in the same person, and the condition may be mixed with other neurotic states of many kinds. In all the phobias the central feature is anxiety, an anxiety which comes as an attack or an anticipation when certain locales, objects, persons —when, in general, certain external stimuli are not avoided. Though the patient may be able to rationalize his fears to a certain extent, this is largely a self-deception; more often the patient realizes the absurdity of the fear and the illogicalness of the external stimulus as a fear producer.

This is true because the stimuli are *displacements*, and the name *displacement* is given to the very important mechanism which rules this neurosis. The patient is not "really" afraid of something outside himself in the real world; he fears, without knowing the source of his fear, certain impulses of his own. Thus, certain women consciously fear to go out on the street where they are afraid they may get dizzy and fall; this is a disguise and a displacement. They are found on analysis to have a strong "prostitution complex"; that is to say, sexual wishes which they repudiate as wrong, and their distorted recognition of being in danger of temptation comes out as a fear of "falling" on the street, where they would be "streetwalkers." Besides the displacement, repression is also used to keep the primary sexual fantasy unconscious.

The mechanism of displacement is not limited to the phobias. It appears in other neuroses to some extent; it comes out very strongly in dreams and can be noted not infrequently in everyday life.

The ordinary burglar dreams of adolescent girls will illustrate very well the mechanism of the phobias. The girl has a sexual wish, which strikes even her partly asleep ego as a danger. Her ego reacts to this internal danger with anxiety, at the same time displacing the locus of the anxiety outward, so that it appears to come from an external "burglar." The anxiety is the ego's fear of the instinct; the defense is (1) attempted repression of the wish; (2) displacement outward to the dream burglar. That this dream is exactly like a phobia is attested by the fact that there are actually many persons who while awake have comparable fears of imaginary burglars; in other words, they have a "burglar phobia."

The repressed wish in anxiety hysteria is genital, as in conversion hysteria. The anxiety hysteria of small children has been well studied and shows most clearly the mechanisms which have been outlined. Freud's classical study of the horse phobia of five-year-old Little Hans showed that Hans' fear of having his penis bitten off by a horse was, in fact, a fear of retribution from his father for hostile wishes toward him and sexual wishes toward his mother.

There is a tendency in the psychoanalytic literature to differentiate too minutely between the various phobias. There is a certain amount of justification for this, but not too much, and the whole tendency is probably a cultural lag from the days when the fears were given their Greek names such as agoraphobia, dromophobia, even phobophobia (fear of fear). The central mechanisms are the same. Anxiety is the central feature, and it is a *signal* given by the ego to itself that there is a danger. This danger is the internal impulse, which is then falsely attributed by displacement to the outside.

The variation in the phobias comes in regard to the fantasies used for defense. The simplest of these is the attempt to rationalize, mentioned previously, where the patient strives to bolster the stability of his displacement arguing for the reality of the external danger. This can be done perhaps for snakes and busy streets, but it usually falls down and, in general, is unconvincing. Such secondary defensive measures as rationalizing, or avoiding, are said to be part of the "secondary façade" of the neurosis. The defense fantasies may be secondarily erotized; that is, they may be reminiscent of some type of sexual fulfillment and furnish some substitute satisfaction. Thus, in claustrophobia of the so-called "true" type, the patient to avoid a danger seeks refuge in a closed space; he goes into hiding. In the unconscious the closed space is then imagined to be a uterus and the situation a substitute gratification for a wish to be with the mother. The anxiety appears when there is a threat to disturb this state. The reader will recall the literary version in Poe's "Pit and the Pendulum." Such erotization and rationalization are comparable to the work done by the ego in the dream, where the manifest content is given the appearance of reality, and where substitute gratifications take the place of the repressed wish, in the process known as secondary elaboration.

Of special importance to those seeking training in psychosomatic techniques is the fact that many asthma attacks appear to follow the mechanisms discovered for the anxiety attack in anxiety hysteria. Not only are many "allergens" found to have a deep psychological meaning to the patient but the circumstances that precede the attack and the general psychological circumstances within the patient are found to be in all respects the same as in anxiety hysteria. Such asthmas are an "organic" type of phobia in which the spasms replace the anxiety of the "nonsomatic" anxiety phobias. Thus it has been found that in some cases where face powder and cosmetics are supposed to be provocative allergically, the patient treats them psychologically in all respects as if they were the spurious outward dangers of a typical phobia; and in associations and dreams she represents cosmetics as making her more attractive and prone to sexual advances. Asthma cases, too, (as the Chicago study shows) erotize their secondary defenses, get substitutive gratifications from being protected by mother figures.

The study of anxiety hysteria broadened psychoanalytic therapy and necessitated the introduction of certain new concepts. These were, as has been noted, displacement, secondary erotization, anxiety as danger signal, internal danger, external danger. Schematically, for this neurosis the ego is seen to repress certain genital impulses, to react to them with anxiety, to attempt certain secondary defenses such as displacement and construction of the secondary facade of avoidances and substitute gratifications. The id (non-ego instinctual part of the personality) is said to be the fount and locus of the unconscious impulses; the ego defends itself against them.

Obsessional Neuroses (Compulsion Neuroses)

The obsessional neuroses are characterized by obsessions, which are ideas that appear as if forced on the patient, and by compulsions, which are acts that the patient feels coerced into doing. The symptomatology of the neurosis is conveniently divided into these two, both descriptively and psychologically. For the obsessions have a different content from the compulsions, although both share the sense of coercion. The obsessions have an unwelcome, perverse, aggressive, or criminal content; they are absurd, immoral, or esthetically offensive. To attack a beloved person, to shout obscenities, to commit incest, sodomy, or murder are outspoken examples of their content. The patient may be disturbed by these ideas, or he may simply regard them indifferently as absurd and incomprehensible, coming from he knows not where. In contrast, the compulsions are actions or tendencies to act, and they have a moral purpose; they resemble propitiations, atonements, and self-punishments or serve as precautions and restrictions. They often take the form of a meticulous overdoing of such functions as eating, going to bed, washing, and become travesties of a ritual; they often are exaggerations of demands made on the individual during his upbringing.

All obsessions are not so immediately comprehensible as in the examples just given. Through the mechanism of displacement, which was described under the account of anxiety hysteria, they suffer disguise, so that often trifles come to stand symbolically for the aggressive and erotic wishes mentioned. To step on a crack in the sidewalk comes to mean symbolic incest or murder as illustrated in the childhood rhyme, "step on a crack—break your mother's back." The unconscious origin of this jingle is that described; some children repeat like parrots without unconscious motivation. Certain numbers may become "bad," others "good" through chance associations; and the neurosis will bear a strong resemblance to a superstitious system.

It is as though the "good" compulsions somehow offset, made up for, atoned for, or canceled the "bad" obsessions. The view thus given us of what the ego does is quite different from the neuroses considered hitherto. It seems weaker, the servant now of powers of "evil" and of "good," neither of which it accepts as valid or compatible with its own conscious standards. For this reason, in the compulsion neurosis, psychoanalysts find it convenient to speak not only of the ego, the main—essentially conscious—part of the personality, and the id, which would harbor the unconscious instincts, but introduces conceptually an unconscious conscience, the *superego,* which stands off with some detachment from the ego, metes out childish punishments, and when unheeded provokes in the ego a sense of guilt or conscience anxiety. The anxiety in the obsessional neurosis is not, as in the anxiety hysterias, attributed to an outwardly located false danger, but is felt directly as fear of punishment, or guilt. The ego plays a very difficult double role, trying to serve its two unconscious masters. The superego we know to be the residue and representative of parental authority, now included within the total personality, though somewhat unintegrated with it; and the ego strives to ward off through its rituals and atonements the imputed vengeance for the obsessional satisfactions.

The defense mechanisms used by the ego in this neurosis include those mentioned previously—repression, displacement, identification; and the ego still reacts to the threatened internal danger with anxiety. But several other defense mechanisms, some of them well-known, others not so easily formulated, make their appearance prominently. The aim of these is to avoid anxiety. The first and most important of these is *regression.* To understand the import of this mechanism, it must first of all be recalled that the content of the obsessions is perverse. Chiefly the desire expressed in them is to soil, dirty, humiliate, kill, castrate, or otherwise injure a beloved object. These anal and sadistic ideas are considered sexual expressions, but of a *regressive* order, since it has been discovered by psychoanalytic investigation that in normal infantile development, there is a stage preceding the early genital one, in which anal and sadistic expressions represent the sex life of the small child, when it expresses its love by blows and soiling. In the obsessional neuroses, the sexuality of the individual partly resumes this ancient mode of expressing its relation to love objects, which disguises its purpose from the affected ego.

Another defense is called *isolation.* The ego manages not to let its left hand know what its right hand is doing, often literally. An emotion may be isolated from its proper ideational content, or two ideas that belong together may be kept separately. For example, a patient has an obsession of attacking his sister sexually. This he regards coolly, as an unmeaning idea. But he tries the lock on his door three times every night, he stretches a string by his bed to trip him in case he should get up, and though an atheist he prays for heavy sleep each night. He maintains nevertheless that there is no connection between the fantasy and the protective ritual measures; both he says are absurd.

Undoing, or cancellation, is another defensive trick of the ego; for example, when a patient thinks of a "bad number" which unconsciously reminds him of a death (say 65, when a relative died), he hastily thinks of a "good number" (100, which appeared in a frequent saying of his grandfather when a relative was mentioned, "He should live to be 100"). The good number cancels out the bad.

Another more extensive defense, which appears in other persons, too, is called *reaction formation.* This is a character alteration in the direction of kindness, cleanliness, and gentleness; traits which are called upon to offset and appear in place of the aggressive and dirty impulses. The patient appeals to his general character to show the absurdity of the obsessive cruelty and soiling impulses; acts of overkindness replace the cruel intentions; it is a case of a consistent overprotestation.

Among the interesting forms which the mechanism of displacement may take in obsessional neuroses is the projection upon the world not of presumptive sources of danger, as in anxiety hysteria, but of connections between events, so that the world appears to be full of odd coincidences and superstitious omens. This is the counterpart of the real connections between events which the person with the obsession denies; what he denies in himself he fantastically ascribes to the outside world. A related type of self-observation is what one of Freud's patients called the "omnipotence of thought," an overestimation of the power of his ideas for both good and evil. The sense of the irresistibility of the compulsion is attributed to the patient's own "thoughts." Since the patient, as a result of his regression, is markedly ambivalent to his love objects—that is, he both loves and hates them—he finds some expression for this in a perplexity, which then may be projected on to external matters in the form known as the *folie du doute.*

The neurosis is attended by a definite type of character, which in its milder forms, may appear without marked symptoms. The ego is modified to ward off the aggressive and anal impulses, and we find the character containing numerous ethical and aesthetic exaggerations; the person with the obsession is pedantic overaccurate, neat, formal, punctual, and scrupulous, This type of character is not entirely to be separated in classification from what has been called the anal-erotic character, and it goes back to a comparable cause. Psychosomatic studies have found this type of character in certain stubborn cases of constipation.

Obsessional neurotic manifestations may arise at any time of life, most frequently somewhere between the ages of three and thirteen. At present psychoanalysis has furnished the sole means of cure, although a successful outcome is by no means assured.

Pregenital Conversion Neuroses

An anomalous position in the classification of the neuroses is occupied by the tics and stuttering, and according to some authors, by bronchial asthma. The symptoms of these states resemble conversions in that they are disturbances of the innervation of certain functions.. But analysis shows that the unconscious sexual impulses to which the symptoms correspond are not genital, but perverse, or pregenital, as Freud's terminology prefers it. In tics occasionally the actions are accompanied by aggressive, anal or sadistic explosions either verbal or active (the "compound tic" of Gilles de la Tourette). Stuttering seems to depend on unconscious fantasies of biting and coprophagia. The understanding of these conditions is incomplete, and the position of the neurotic forms mentioned not assured.

Pathoneuroses

These are neurotic structures which look as though they were reversing the process of ordinary conversion. Instead of a psychic fantasy producing a change in an organ, an injury to an organ produces a psychic system. Well known are paranoid conditions following anal operations or delivery. Ferenczi includes tics among the pathoneuroses, believing that a physical change in the affected parts preceded the psychologic functional disturbance. The hypochondria sometimes seen in almost pure culture after a trauma is related to the pathoneuroses. Theoretically the patient has substituted part of himself for previous love objects. He has, so to say, fallen in love with his wounded arm, endowing it with qualities ordinarily reserved for the genital.

This condition is also considered to be related to paranoia.

Narcissistic Neuroses

The Depressions.—The depressions are a large body of disorders ranging from mild states of blueness to the severe melancholias of psychotics. The central feature of the depression is the sense of guilt and self-reproach that seems to dominate the picture. Typically the depressive person evinces an intense hostility to himself. It is, therefore, not a little surprising that Freud should have called the depression a narcissistic neurosis, since the implication of narcissism is, of course, self-love. Yet the study of the depression has borne Freud out; the hostility with which the depressive patient is flagellating himself represents the equivalent of his sexual life. He is loving himself sado-masochistically. Analysis further reveals that this sado-masochism is tied up with a regression, not as in the obsessional neurosis, to an anal level of development, but to the earliest oral or cannibal stage: to the stage which the small baby demonstrates when his mouth is the center of his emotional life and everything goes into the mouth.

The study of the depressions first revealed the immense importance which the defense mechanism of identification may play; and it revealed also the best example of the functioning of the superego. The typical course of development is as follows: The patient suffers a loss, the loss of a beloved person, of his country, his professional position, or something personal or impersonal in which he has invested a large part of his love interest. He identifies himself with the lost object (in case of the impersonal objects with some symbolic personal representation), so that for certain purposes he is this object in effigy, so to speak. His ego is thus modified for the time of the depression by the identification; and while it is so, he proceeds to attack and debase the introjected object, turning the unconscious aggression which had previously been present in the love relationship against himself. Thus in a depression set off by the death of her grandmother, a patient constantly reproached herself for all the things "in me which were like Grandmother." The problem as to why it should be the aggressiveness that comes out against the previously loved object is solved by considering the regression which takes place; not only is there the regression from object love to identification, but also a regression from genital to oral sadism; so that the type of relationship with the internalized object partakes of the sadistic quality of a very primitive relationship. The patient is literally eating himself up.

The superego is particularly cruel in depressions and it is from this agency that the reproaches against the ego emanate.

The importance of identification with an ambivalently loved object is paramount; so much so that Freud could say of depressive suicide that psychologically it was really a homicide. In somatic diseases it is often found that the depressive mechanism is at work; the diseased part is often treated as if it were the lost object, so that the psychological picture obtained through a psychoanalytic study shows the aggression originally directed outward, and perhaps concealed in an ambivalent love relationship, finally turned back against the self—that is, the lesion. A slight distortion of this idea puts it that the enemy is attacking the patient; as when a person with a heart lesion accused his family of "eating at my heart."

In general, organically ill persons are aggressive to the environment, and in many this aggression is "pulled back" and directed against the self in the form of depression or irrational, irritating demand for care.

Manic states have not been so adequately studied as the depressions. Identifications play a great role there, too, but the identifications are erotized and serve for enjoyment. Certain manic attacks find the patient enjoying in fantasy the double role of father and mother in sexual intercourse; and fantasies of being at the breast are the rule. A favorite mechanism here is that known as *denial or negation*. The elated person denies and repudiates all in himself which does not fit in with his ego ideal.

Drug Addiction.—Alcoholism and other drug addictions seem closely related to depression in its basic mechanism. Following an initial depression set up as described, the drug or alcohol is taken to bring about a synthetic mania or state of happiness.

Neurotic Character.—A certain type of patient "acts out" alternations of ups and downs, not as depressions and elations but by successions of successes and failures in real life. The successes are equivalents of elations and often have some of the glamorous, self-deceptive qualities of this state. The failures are brought about unconsciously and are depressive equivalents. Of psychosomatic interest, sometimes these "failures" may take the form of somatic illness, especially of the gastrointestinal tract or become accident habit or proneness.

Paranoid Mechanism

The paranoid mechanism is to be seen in nearly pure culture in certain chronic paranoias, but is conspicuous in many other conditions, and occurs to some extent in normal persons. The defense used in this condition is known as *projection*, an attributing to the outer world, especially to other persons, of trends or the result of trends within the subject's own unconscious. This is most marked in the persecutory form of paranoia, where the projection works hand in hand with a type of denial which is descriptively called "reversal into the opposite." Analysis shows that the persecutor is really an object of unconscious homosexual love; so that the conscious thought, "He hates me," is the end of an unconscious chain of ideas that begins, "I love him," goes through, "I do not! I hate him," which is then rationalized, "Because he persecutes me." In the jealous form of paranoia, the unconscious homosexual interest appears expressed as if it were a heterosexual jealousy; as if to say, "I don't love him. I love her and hate him," but the aggressive treatment given the heterosexual object already brings the patient's protestations of love under suspicion. Murders of imagined persecutors or alleged rivals are really homosexual lust murders, viewed from the unconscious.

The paranoid mechanism depends very much on the rationalizing intellectual work of the ego as a secondary defense; and paranoia itself is the intellectual mechanism par excellence. It is the systematization of the false belief that gives true paranoia its clinical stability and characterizes it. As part of the systematization, often retrospective falsifications enter to make the delusional picture consistent.

Even in less serious conditions the paranoid ideas, the suspicions and jealousies, are not susceptible to argument. In the erotic paranoias, or erotomania, the homosexuality is disguised by a delusional heterosexual love.

The role played by this mechanism in somatic illness is uncertain, although some of the earlier writers (Jelliffe, Groddeck) have compared or drawn parallels of a suggestive order between paranoia and new growths.

Schizophrenia

A description of schizophrenic psychoses would go beyond the scope of this synopsis into the realm of psychiatry as such. However, a brief outline of what is thought to be the central feature of schizophrenic psychoses may be in order. In the first place, libido, emotional interest, is withdrawn from the world. This is often experienced subjectively by the patient as a *destruction of the world,* and various feelings of unreality and depersonalization mark this stage. The interest is turned to the self—there is an *introversion* —heightening narcissism or self regard, which may give rise to grandiose fantasies. Finally in an attempt to recapture some contact with the world, the third stage of *attempt at recovery* is made, words are endowed with significance previously attached to things, new systems of imaginary reality are set up, and various symptoms seen elsewhere in the neuroses, such as paranoid ideas, conversion symptoms, or obsession-like ideas appear.

The relation of schizophrenia to any organic changes is still among the perplexing problems of psychiatry.

Sexual Perversions

Though these are usually given special treatment in analytic textbooks, it is doubtful whether this is satisfactory from the standpoint of classification. Male homosexuality usually is complicated by other neuroses or character disorders, especially alcoholism, and depressions. At least a very common form appears to belong among the narcissistic neuroses, and shows the oral fixation and the identification mechanism so common in that group. The identification appears to be with an active mother; the partner is a fantasy picture of the patient himself as a child. Female homosexuality often depends similarly on a girl's identification with her father. The fetishes represent a female phallus, which infantile thinking supposes to exist, and are denials that creatures may exist who do not have a phallus; this denial is undertaken in order to combat casteration fear. Similarly the transvestite is trying to represent a woman with a penis for the same reason. But these and other perverse practices rarely form a monosymptomatic condition.

Psychopathic Personalities

The psychopathic personalities have a weak grasp of some important part of reality, generally in its social aspects. The group includes certain criminals and sexual offenders; but a number certainly related to this group are entirely sound in their ethical sense, although they act impulsively, and are unclear as to what they are up to in their everyday life and in their personal relations. Besides the consistent weakness of the sense of reality, there is no dynamic unity in people of this group; various neurotic mechanisms are at work, perhaps those described under the narcissistic neuroses more than any others. Many suffer from conversions and phobias as well.

CHAPTER XVI

INDUSTRIAL MEDICINE; PREVENTIVE MEDICINE

RAYMOND HUSSEY, M. D.

Occupational health and medicine has engaged the interest and attention of a great many individuals and groups of individuals for some years. For the past five years interest has been intensified and attention has been focused sharply on establishing a certifying board to qualify physicians as diplomats in the field of occupational health and medicine.

The scope and content of the subject of occupational health and medicine has been and continues to be considered from the point of view of the community as a whole, quite independent of seeking a justification for the subject as a medical specialty. Now that attention is focused on this field, a brief review of recent observations and experience is in order.

When the structural components of a community are considered from a functional point of view, one finds a number of interdependent and closely interrelated segments, such as the family, the home, the church, the school, and the occupation. (There are others, of course.) These are actually organizations made up of human beings closely or loosely united through interpersonal relationships representing groups and individuals. Our chief interest is concerned with the observation and interpretation of human behavior as it is related to motivations and actions. Varying degrees of cooperation and competition are attributes common to all of these persons. Furthermore, the actions of these persons are influenced by discipline which is self-directed or derived from other sources.

The occupational segment of the community is a community in itself which can also be described with reference to its structure and function as an organization realizing that its differentiation from other segments of the community must be only relative. For example, the *obligations* and *responsibilities* inherent in the *work situation must* be *accepted* by the employee, while for adult pĕrsons in other segments of the *community* the *obligations* and *responsibilities* are for the *most part accepted voluntarily.* It is important to understand the function of the physician in such communities and on this basis establish criteria which may justify the identification of occupational health and medicine as a medical specialty.

Four factors deserve major attention:

One of these differentiating *factors* is *discipline* in any factory or business. (A physical and mental regimentation, if you will.) The regulations are somewhat different for each establishment, and operate to create a slightly different environment for the employee in a particular organization. Such rules include working hours, rest periods, the machines used, the air supply and environmental physical factors, location, cycles of production, in short, all the various organizational patterns for production.

Actually, this factor is based on several other elements which demand such regulations or conformity. For example, unlike such institutions as the church, the school, or the family, the goals of a business establishment are highly specific. This means a much tighter discipline is required. Likewise, the company, whatever its other needs, must be efficient enough over a period of time to earn profits. In short, there is a bare minimum below which this organization cannot fall in the achievement of its goals, if it is to survive. That is to say, management has certain financial responsibilities. It must be immediately apparent that in this situation the health of the worker is a revelant matter to production.

The *second factor* is *competition* which is quite different from the situation in the church, the school, or the family. In these segments of the community of course one strives for office and other advantages since a social system has evolved in which all are urged to strive desperately for the highest position or advantage even though statistically actually only a few will achieve them. In the work situation, however, the competitive spirit is a central focus of attention. Thus, in a business organization or factory, this factor may be expected to have more important impacts on the temperamental component of individuals and, therefore, on their behavior pattern.

The *third* and *fourth factors* are interrelated and overlapping to some extent, in that collectively they are concerned with (1) the procedure by which the new employee enters the organization, and (2) the relationships contingent to continued employment. In popular language, these factors are concerned with "the man and the job."

The *third factor* is the *employment procedure* which includes all activities connected with selection, training, and placement of employees. In popular language, this is usually referred to as "fitting the man and the job." These procedures are part of the function of personnel administration and vary considerably in different business and manufacturing concerns. In the nonoccupational segments of the community there are no experiences similar to the employment procedure. These induction procedures exert an impact on the individual of tremendous importance in determining his ultimate attitude toward his job, his supervisors, and the organization as a whole.

Furthermore, we ought to keep in mind that job training as a part of employment procedures is much more than merely teaching the new employee in which direction a left-handed nut turns, and incidentally, the effect of mishaps on the health of the employee. Such training is preceded by *employee selection* and is followed by the actual placement in the working organization.

Too frequently in the course of the induction process the industrial physician enters only to determine that the candidate for a job has the more obvious health requirements. The medical examination is a much broader task.

The physician must assume a direct and significant role in ascertaining the employee's "occupational fitness" and capacity with reference to job selection. In addition to the mere physical examination, he must make a mental, emotional and a social appraisal of the individual. The responsibility for these matters should not be left mostly to the employment group, including the psychologists and interviewers.

For such participation to be effective the physician must acquire knowledge concerning the *physiological* and *technical* requirements of the new job, including speed of reaction time required, repetitive muscle use, strength, mental ability and memory or concentration time span, not to mention the usual matters of plant or office hygiene and sanitation.

Further, if the physician has enough information about the group structures within and out of the occupational sphere, it is possible that social situations which may produce symptoms of ill health may be prevented.

In these circumstances the potential areas of activity for the physician in the placement process will vary considerably in different business and industrial organizations. Among the reasons for this variation should be included (1) the interest and skill of the physician in handling this phase of the medical work, and (2) the organization and program of personnel administration.

The *fourth factor, the actual day-to-day adjustment of the worker to the job,* derives from the relationship of (1) the individual to other individuals and to the group with which he is to work, i.e., his ability, capacity and cooperativeness, and (2) the worker's attitudes, skills, training, productivity, and job satisfaction.

The types of skills which the worker utilizes are ordinarily different from those which he applies in the course of his daily life outside the factory or business. Some of these are highly specialized, of course, while others are quite simple. This means, first of all, that he may use different muscles, may strain different organs, or become fatigued in different ways, even running different health risks during his working day.

This difference is also reflected in the worker's attitude. He is likely to conceive of his job as a thing apart, often to be approached with much less enthusiasm than his leisure time. It is possible to integrate the working activities so that both will bring pleasure and satisfaction as well as a better functioning capacity. Here, again, the relationship with mental health and physiological well-being is shown.

The initial placement of an individual in a job *is at best* a screening procedure. It is the *adjustment of the individual to the job requirements* and his *fellow workers,* as well as to the larger framework of the factory, which becomes paramount.

What has happened to the employee during the induction process? What influence have the various steps had on his sentiments (hopes, fears, expectations)? To what degree has he developed the attributes of loyalty, integrity, and solidarity? What future is ahead—transfer? promotion? discharge? What are the factors that determine these events? Whose task is it to find out?

Close cooperation of the physician in supervisor-employee relations is required for this task. The matter of *job adjustment,* in short, is one of the most important aspects of the health maintenance program. It is the application of the "*follow through principle.*"

Of all *supervisor-employee relationships* perhaps that between the *foreman and employee* is most important. Here we note and give attention to many ramifications. Just as the factory or business establishment is a differentiated smaller community, so is the effective working group another smaller community. Repeated investigation of work situations in factories makes this point clear and emphasizes supervisor-employee relationships. These are functional groups, in the sense that they *must* work together if the *production goals* are to be accomplished. Important, however, is the fact that these smaller segments usually have group ideals, group satisfactions, and informal group rules. These rules are not written, but they serve to influence the scope of the worker's actions and job satisfactions, none the less. The role of the foreman as a supervisor in maintaining effective cooperative working conditions cannot be emphasized too much, and the consulting physician should do his utmost to advise the foreman. Opportunities are great, indeed, for the alert physician to make a significant contribution to satisfactory foreman-employee relationships. It is a sphere of interest too little appreciated and therefore quite undeveloped.

Industrial physicians, some employers, and some employees may object to this conception of the industrial physician on the grounds that these are matters for other people.

Indeed, the physician has a great deal at stake in developing this service, since it places him in the position of counselor in handling human problems on the job—the foreman's problems as well as those of the employee. In this manner the *physician* may open channels of communication between himself and the *foreman* as well as with the *employees*. The foreman will have much knowledge of the daily work situation that will help the physician to understand the meaning of observed symptoms that suggest a diagnosis of human situations arising on the job. There is neither "rule of thumb" for such diagnoses nor a "handbook" for remedies to correct them. However, the physician is thus brought directly into contact with plant operations where most of the human problems of employment become manifest. Some examples will be cited in support of this view.

Last summer during a week's visit at an industrial plant in Rochester, New York, an opportunity arose to attend a foremen's conference. The purpose of the conference was to give foremen instruction in handling human problems as they arise on the job. The case presented on this occasion concerned an employee who was a highly skilled tool maker whose services were very valuable and at that time very much needed. He had been absent frequently, tardy in reporting for work on several occasions, and was rather resentful when his foreman attempted to learn the reasons for his lost time and his attitude. This case history was recorded on a disc. The foremen attending listened attentively and according to the plan of procedure they were to express their views about the diagnosis and a remedy for the situation described. The case report continued with conversations between the foreman just referred to and a foreman on another shift in a different part of the factory. Foreman A suggested that a possible remedy would be to transfer the employee in the hope that under the influence of new associations he might become a more effective and efficient worker. The transfer was affected and the remainder of the record was taken up with on-the-job conversation between foreman B and the worker. Foreman B handled the immediate situation quite successfully. A physician possessed of the necessary skills and tools could have been most helpful to both the foreman and the employee in this situation.

This experience and thought supported a point of view presented at two of ten conferences organized in Detroit during the autumn of 1945 dealing with "Human Problems in Industrial Employment." One of these conferences was presented by John Currie, Labor Relations Counselor, Chicago, who emphasized the great need for physicians to participate in such situations as those just indicated. This was an entirely new thought for many of the physicians attending the conference, and there was divided opinion among them as to whether such an activity was a proper function for a plant physician. The point of view expressed by Currie was supported and extended at a subsequent conference, presented by Douglas McGregor of the Massachusetts Institute of Technology, "Industrial Relations and the Psychologist." At the conclusion of the conference McGregor stated that in his opinion if physicians did not assume responsibility for these matters, members of nonmedical professions would take over the task, or a new profession was likely to develop.

In arranging courses during the autumn of 1946 for instruction in "Human Relations in Industry" as a component subject of "Occupational Health," a conference was held in which two foremen from one of the neighborhood industrial plants participated. This conference was conducted along the lines familiarly known in medical instruction as "dry clinics." The conference was entirely unrehearsed and the foremen were requested merely to recite various relationships with employees as everyday experiences in which matters of discipline, competition, fellow employee and supervisor-employee relations, and work efficiency were involved. The result was somewhat startling to the members of the conference group in that, time and again each of the foremen indicated how much the physician might have contributed had he been part of the picture. Their remarks brought into striking relief the great need that exists for physicians to acquire the skills, techniques, and interest to function as counselors in labor relations involving personal and group relationships on the job. (Lest this be misunderstood, it should be stated explicitly that no suggestion is made for physicians to play any role in labor-management disputes of any kind whatsoever.)

This conference prepared the students for a profitable experience in other conferences that followed shortly thereafter. The first of these was presented by Margaret C-L Gilden, Washington University, St. Louis, who described her activities in small manufacturing plants in Connecticut concerning foremen counseling and training for handling human problems on the job. Other conferences conducted by Gordon Eadie, W. J. Fulton, Detroit, H. H. Himler, Ann Arbor, and Lydia G. Giberson, Metropolitan Life Insurance Company, New York City, presented many examples of individual supervisor, foreman, or employee problems where a properly skilled psychiatrist could render invaluable service in correcting existing difficulties. A factory community was described by Eadie, Fulton, and Himler, and an office community was described by Giberson.

Equally important is the established fact that the greater percentage of all employee visits to an industrial dispensary are not fundamentally concerned with "organic" problems. It does not suffice to say merely these are "functional cases." *They are individuals presenting symptoms resulting from disturbances, due chiefly to emotional etiology and personality quirks associated with social etiology.*

The activities presented thus far are included in the broad subject dealing with human motivation and behavior, i.e., *human relations* or *human factors* in industry, and since this is such a broad subject it is believed that it is well for proper identification as applied in this discussion to refer to the *medical aspects* of human relations in industry, embracing as it does the *social approach to etiology,* i.e., the causation of human situations arising on the job.

The study of human relations affords one of the best approaches to the development of conception of health, qualitative and quantitative. The converse is true if health inventories are ascertained from a negative point of view: the need for a practical approach toward dealing with "well" individuals, another distinguishing feature of occupational medicine, as a matter of fact. Actually the physician in industry is dealing with well persons instead of ill or complaining persons as is usually the custom in community practice.

Another means to "postive health" is the rapidly developing program of annual health examinations of industrial and business executives. Training of industrial physicians has been in progress over a number of years, but the acceleration of the program within the past three years has been so great that it is said that existing facilities are being strained to meet the demands.

There is no intent to imply that human relations activities are a part of general community practice of medicine. Nor is it important to comment on the interest of practicing physicians in this subject in the general community. The important facts are (1) that human relations on the job are more complex than in other community segments, and (2) that the occupational situation offers unusual opportunities for the development of a *positive concept of health,* as well as the practice of positive health. Practice in the field of human relations in industry has thus far been carried on principally by social psychologists and psychiatrists. Unfortunately, few physicians and social psychologists have developed teamwork in their activities. If success on a wide scale is to be anticipated in this field, physicians' practice of occupational health and medicine must acquire facility in dealing with industrial problems either by developing proper skills or cooperating closely with competent consultants.

All of the considerations that have been taken into account up to this point justify a differentiation of the work situation from other community interests and activities, relevant though they may be.

If some method could be designed to represent the actual value of such work in dollars and cents, as is possible in the case for improved *products, methods of production, sales* and *distribution,* the returns would prove to be large, indeed. Unfortunately the activities concerned with *human maintenance* in occupations remain among the intangible services to business and industry.

The presentation of other differentiating factors follow—factors that are more obvious, but too infrequently emphasized.

The value of any information about man's reaction to his environment is directly related to the soundness upon which it is based on physiologic principles. There is a great need for physiological studies to be designed with objectives aimed primarily at work and industrial requirements, i.e., *occupational* physiology or applied physiology in industry.

Our knowledge must be greatly extended to establish the physiological basis of health, and until this is accomplished it is unlikely that we shall have a concept of health as well founded scientifically as our concept of disease. The physiology of job performance, involving as it does the requirements and attributes of occupational fitness and capacity, needs great amplification of existing knowledge as well as the acquisition of new knowledge. The relationship of nutrition to health and work is a subject of much investigation.

The discrepancy in our knowledge of fatigue provides an excellent illustration for the need of developing research in the field of occupational physiology. From laboratory studies a considerable body of information about fatigue in the physiological sense has been acquired. Yet when we enter the factory we discover that most of this information is not relevant. The worker who complains of fatigue may be performing a task in which physiological fatigue plays a relatively minor role. His work may be repetitive, but the chances are that the muscles have sufficient respite between operations to recover. Heat, lighting, and so on, may be clearly adequate. Nonetheless, his fatigue is real. This statement is not to be construed as discouraging "pure" scientific research. It is intended only to emphasize the great need for research in a particular field of human physiology. The familiar expression that the "pure" science of today is the "applied" science of tomorrow remains true.

There are many problems connected with industrial operations, machines, and products which have broad physiological implications to employees as well as consumers. Engineers who devote their attention to industrial design are constantly aware of the need of applying physiologic principles to the functional rquirements of the product. This application of physiology represents, in its best form, an approach to *positive health.*

Although little has been said about hygiene and sanitation, attention should be called to its importance as a contributing factor in labor wastage. The word "hygiene" in its best sense was employed by Pettenkoffer who introduced the subject many years ago and established the Institute of Hygiene in Munich; this subject was introduced and established in our own country by Billings, W. H. Welch, Victor C. Vaughan, and Howell.

Hygiene is concerned with the promotion and preservation of health. Hygiene and health are not synonymous . Health is an objective; hygiene is a means to that end.

Hygiene is a collective science made up of all sciences concerned with the study of etiology, and the methods for controlling causative influences and factors so that exposure of individuals to various agents and conditions will not be harmful. The need for considering multiple etiological agents in any condition of exposure, and for keeping clearly in mind the division between predisposing, provoking, and continuing factors, is obvious.

When scientific studies of disease are integrated with adequate physiological observations an approach to *physiological hygiene* becomes possible.

The only justifications for distinguishing occupational hygiene from the broad subject of community hygiene are (1) the mechanisms required of persons in adaptations to the particular circumstances and conditions found in offices, shops, and factories as contrasted with the community outside; (2) the special medical, chemical and engineering knowledge and experience required to deal with problems presenting.

The conditions of general ventilation, illumination, and air conditioning have rather general applications. In any occupational situation, however, there may be special requirements for these. Moreover, in the factory the problems of temperature and humidity and atmospheric contamination are quite distinctive with respect to the general community (gases, fumes, dust) as well as substances with which employees have contact (solvents, oils, greases). Furthermore, special protective requirements such as process control are distinctly peculiar to the work situation. Added to these we have plant housekeeping, sanitation in its usual sense, noise and vibration which represent distinctive peculiarities in the work situation.

The study of these factors involves chemistry and physics as applied to engineering practice, industrial operations and processes. From a medical point of view the study of these factors involves chemical physiology or pharmacology and toxicology. Achievement in the field of hygiene and safety requires cooperative and collaborative effort between physicians, chemists, engineers, and safety supervisors to accomplish (1) an application of the principles and practice of epidemiology in conducting plant hygiene surveys, and (2) the development of health education programs to impart knowledge of, and to establish, good personal hygiene practices.

An important *component of hygiene,* though frequently *not so generally understood,* is the subject of *safety.* Intensive effort on the part of management to establish safer working conditions has brought about improvement in the mechanical aspect of employment, so that now one frequently finds well-organized safety programs in force. Indeed, the effectiveness of mechanical protective equipment and personal protective devices has contributed about as much as can be expected. Further improvement in the incidence of industrial accidents must be sought through control of the "human factor." The physician must be in a position to make a significant contribution in this regard.

The question may well be raised, how much knowledge must a physician acquire to equip him for industrial medical practice? First, it is necessary that he be a *good physician,* then that he be well oriented in the principles of other related and relevant subjects. It is difficult for anyone to be well equipped in more than one profession. It is possible, however, for an individual to understand and use the fundamental principles basic to other professions, so that he may be able to speak the language of another profession to its members, thus allowing a fruitful exchange of ideas. This applies to physics, chemistry, and engineering practice from the occupational health point of view. Furthermore, with the proper orientation a physician may know the limitations of his knowledge and will know where to seek and to get aid in the understanding and control of any problem that arises. The reciprocal situation also arises in that members of the other professions will come to know when and where to go for consultation with a physician who is competent to aid in the solution of a given problem.

Occupational hygiene practices are now well developed wherever good employee health programs exist. The intensive interest and activity in this field especially during the past decade, has brought the subject to mature technique of accident health therapy. During the next decade, emphasis should and probably will be on a better understanding of human relations.

In summary, the points emphasized have been:

1. The discipline in occupational situations.

2. The competitive spirit in occupational situations.

3. The reaction of human beings to the employment procedure.

4. The problems of human maintenance on the job, which constitute the broad subject of human relations.

5. The special etiological factors peculiar to, or accentuated by, operations and processes connected with occupations.

6. The need for the study of placement in occupation.

7. The need for the study of physiology with relation to (a) a positive conception of health, (b) the application of physiologic principles to the study of the reaction of man to various etiological factors peculiar to or exaggerated in employment, and (c) the necessity of developing physiological research designed for the needs of industry.

8. The work situation may contribute to the development of illness.

9. It would appear desirable to integrate our old concepts of etiology and physiology as background for concepts of health.

10. If the integration suggested is successful it appears likely that we shall not have to use such expres-

sions as "psychosomatic medicine," "social physiology," "clinical sociology," "social medicine," and "social epidemiology." However, until this integration is a reality it may be well for the sake of emphasis to employ these terms.

The opinion is expressed that these conclusions are sufficiently distinctive to separate the work situation, however relatively, from the community as a whole, and on this basis establish occupational health as a medical specialty.

Relatively little has been said about the function of the physicians, chemists, physiologists, pharmacologists, biochemists, biophysicists, and engineers to participate in the activities of occupational health and medicine. The problems connected with procurement of personnel are concerned with establishing this field as an attractive vocation, professionally, economically, and socially.

In this presentation we are primarily concerned with medical personnel. However, in passing, the following comments are pertinent to other personnel.

The one prerequisite for all professional activities in the field of occupational hygiene is *physiology*.

Engineers engaged in the activities of occupational hygiene represent all branches of engineering. Engineers who are recognized as outstanding in this field state that irrespective of which fundamental branch of their profession one represents, it requires at least three years of experience to function competently in the practice of occupational hygiene.

A similar statement with reference to prerequisites and time requirements is made by professional chemists for the members of their group.

More difficult is it to express an opinion about the time required for pharmacologists and biochemists to attain competence in the evaluation and the solution of problems concerned with industrial pharmacology and toxicology. However, it appears safe to assume that the period of time will be equal to or greater than that designated for chemists and engineers in the field of chemical and physical hygiene or occupational hygiene.

Finally, with reference to physiologists and biophysicists we have had too little experience to warrant any definition of criteria of adequacy with those in the field of occupational health to express an opinion.

Educational Needs

The following remarks are concerned with education of physicians only.

There is an urgent need for education and training of medical personnel in the special features and requirements that commercial and manufacturing business has for health and medical service.

There are distinctive differences between the requirements that industry has for medical service as contrasted with those of the community. *Organized* and *integrated programs for education and training* in this field on a *graduate level* are *not included* in *existing educational institutions.*

There are also distinctive similarities between industrial and community medical practice, the teaching of which is the responsibility of established hospitals and schools of medicine.

Undergraduate Medical School.—Instruction in occupational health and medicine should be included in the undergraduate medical curriculum since there are occupational implications in the health of all adult persons. If occupational health and medicine is to be regarded as a specialty, instruction in this field must be offered in the undergraduate medical curriculum, as is the case in all other recognized and established medical specialties.

It is recommended for the first year of medical school that students be taught the subject of community organization with reference to structural and functional relations, as well as the meaning of positive health as related to occupation and to the broader community.

This might be done in connection with the teaching of physiology; or it could be made a separate subject. During the period when biochemistry and pharmacology are presented, usually in the second year curriculum, the subject of occupational etiology and physiology should be considered. Such instruction offered at this time would be particularly advantageous, since it would afford concrete examples to illustrate mechanisms of intermediary metabolism as related to enzyme systems.

In the clinical years, special attention should be paid to instruction in taking occupational histories. The significance of occupation in general, as well as in particular, to heath and disease should be presented in the discussion of each case.

The consideration of occupational diseases is a function of the department of internal medicine just as is so for infectious diseases and metabolic diseases. However, the methods of clinical investigation which have proved so fruitful in our current understanding of infectious and metabolic diseases have not as yet been applied to the same extent to the study of occupational diseases. This unfortunate fact should be corrected by having certain hospitals develop special arrangements for the study of occupational diseases, showing how these principles and methods may also be applied in these cases. During World War II a good start was made in this direction, and it is hoped that it will be continued and amplified.

In general, teaching concerning occupational diseases should be done by infiltration, so that it would be integrated with the subject of internal medicine. In this manner a good influence would be exerted on medicine as a whole and students would take the subject in stride. Supplementing this work, a certain time in the outpatient service should be allotted for students training in a well-organized and efficiently operated plant medical department. As interns they would have the proper attitude and direction, and learn to apply this knowledge to the broader problems of medicine related to occupation.

The relationship of occupational diseases to compensation medicine should not be a deterrent in promoting the clinical study of these diseases. Indeed, it is quite likely that with the acquisition of better information on this subject, compensation medicine will be valuably influenced.

Provision should be made in hospitals for interns to be properly oriented in matters pertaining to occupational health as distinct from occupational diseases. This provision will be established with the broader development and expansion of individual *health examinations.*

The opinion is expressed that graduate study should be divided between education and in-plant training. At least one year should be divided between formal classroom instruction and practical in-plant service. A possible alternate, but one not recommended, would include six months of intensive classroom instruction. The physician should then enter the medical department of some business or industry for further development in actual practice. The length of *time required* for the physician to work under the direction of a recognized industrial physician to develop desired competence from experience will have to be determined by those to whom the responsibility is given to establish qualifications for certification. In arriving at this decision, one should keep in mind the *total time required between entering high school and the completion of an internship,* which will range between twelve and fourteen years. This period should be contrasted with that for engineers and chemists.

We have found it convenient to separate the various subjects of graduate study into occupational health, preventive occupational medicine, and administrative medicine. They may be presented briefly as follows:

Occupational Health

General Considerations.—Presentation of a positive conception of health with emphasis on the need for physicians to develop a proper approach and the skills necessary to deal with well persons in addition to groups of well persons. The physiological basis of health. The relation of nutrition to health. The various factors involved in the requirements and attributes of "occupational fitness."

Human Relations in Industry.—The community as a structural and functional organization. Presentation of the recognition, the diagnosis, and the treatment of human situations arising in the employment segment of the community. Survey of the mental, emotional, and temperamental factors involved in supervisor-employee relations and fellow employee relations for maximum cooperation and efficiency. A discussion of human interests, talents, motivations, and drives in work as related to employee selection and behavior patterns. Cooperative procedures for effective organization of human effort in occupational pursuits.

Medical Aspects of Job Analysis.—The medical responsibilities in understanding jobs in terms of their characteristics and requirements so that the employee's capacities determining his "occupational fitness" may be matched with these. Through conferences the principles of job analysis will be discussed, and by demonstrations the methods of procedure will be presented for determining the content of jobs in relation to skill and to the physical and physiological requirements necessary for effective job performance.

Preventive Occupational Medicine

Consideration of occupational diseases from the point of view of: (a) the individual patient with reference to etiology, pathogenesis, differential diagnosis, prophylaxis, and treatment; (b) groups of individuals with reference to epidemiology and prevention. Emphasis to be placed on physiological considerations and medical control of occupational disease. The biochemistry, pharmacology, and toxicology of various etiological agents will be discussed.

Emphasis will also be placed on a proper approach of physicians for the development of collaboration and cooperative effort with chemists, engineers, and members of other allied sciences in establishing effective control in offices and factories through the application of the principles and practices of hygiene, sanitation, safety, and toxicology to plant health inventories for (1) the promotion and maintenance of employee health, (2) the prevention of occupational diseases, and (3) accident prevention. This involves study of physical and chemical hgyiene, and the physiological reactions of man in health and disease.

Occupational implications of medical specialties—allergy, cardiology, dermatology, endocrinology, neurology, ophthalmology, orthopedics, psychiatry.

Administrative Medicine

Practical aspects of the administrative function of a physician in industry; layout, organization, operation, budget control, and records for an industrial medical department. Functional interrelationship between plant physician and personnel department in employment procedures and labor relations. Interrelations of plant physician with private practitioners of medicine and community health agencies.

These subjects we regard as the essential ones for graduate study. The question of how much further emphasis should be given to pharmacology and toxicology and other technical aspects of plant hygiene surveys would have to be designed for each individual with reference to his interests, requirements and objectives.

The subjects of surgery, of trauma, and rehabilitation should be emphasized particularly from the point of view of dealing with the immediate work situation.

Consideration of legal medical relations, workmen's compensation, labor laws, insurance, and economics deserves a place in the program.

CHAPTER XVII

PEDIATRICS, GERIATRICS AND THERAPY

> "Physicians, like nightwatchmen, know the streets well, but do not know what is going on inside the houses."
>
> —*Hufeland*

Many physicians, almost forced by military experience to revise their conventional ideas of medical practice, find themselves obtaining results, but unable to tell why. They follow a few clues picked up here and there, but are unable to explain their successes to their colleagues or to themselves. This leads to a sense of insecurity, intensified by the accusation that they may be "witch doctors," against which they have no defense until they can explain. But this happened to Pasteur, too! The physician, whatever his specialty, who finds himself unable to explain his successes and his failures, may clarify the issues by taking time to review his methods and procedures with one or more colleagues. Twenty years ago in Vienna when autopsies were the rule, it was said: "We study our mistakes; you bury them."

Pediatrics and geriatrics would appear to be the most widely separated of medical interests. Actually this impression is an artefact produced by medical specialization. Even today the general practitioner is asked by his geriatric patients about children and grandchildren, and furthermore he is often consulted by the children about what can be done for a mother or grandfather.

The change which has occurred in the type of patients consulting the general practitioner was mentioned in the introductory chapter from the point of view of age group and the nature of symptoms presented. The fact should be borne in mind that good pediatric practice is partly responsible for this change. A poor pediatrician may set the feet of his young patients in the direction of diverse illness syndromes, including psychosis or senile deterioration. A good pediatrician may find his patient a grandparent and perfectly healthy at the age in which he or she should belong in the clientele of the specialist in geriatrics.*

Rehabilitation

Had there been more pediatricians experienced in the psychosomatic approach to childhood illnesses several decades ago, specialists in geriatrics and psychiatrists as well as social workers and public welfare workers would have a less heavy burden when confronted with problems of rehabilitation. The pediatrician is in a key position. But every physician treating parents or grandparents should bear the children in mind and every physician treating children should be sure that his efforts are not defeated by a readily correctable maladjustment in their living forebears. It might be added that impressions of relatives already deceased may persist as a damaging hangover in the younger age group and that the quantitative importance of this should always be investigated.

Advances in these fields made during the last five years cannot be reviewed here, but the interested reader is referred to the bibliography. The insertion of this section was merely to call attention to a current trend in medicine which will probably exert a profound influence on the nature of medical practice within the next two decades.

Therapy

The therapy of psychosomatic illness, including illnesses of unknown etiology, illnesses mainly conditioned by emotional factors, and chronic illnesses, is difficult to outline. It is not a matter of the newer drugs for malaria or immunization to typhoid or diphtheria.

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* See Dunbar: *The Care and Rearing of Parents,* New York, Columbia University Press. To be published.

In all such illnesses in whatever organ systems the symptoms become acute, diagnosis and treatment should begin with an adequate psychosomatic history. The physician, trained in a medical specialty whether it be internal medicine, surgery, or psychiatry, may have to give a little time in the beginning and modify his habitual history-taking procedure. This statement cannot be repeated too often, for history taking is not only the basis for therapy but also the beginning of a therapeutic procedure.

Francis Bacon long ago stated that "a man's own observation, what he finds good of, and what he finds hurt of, is the best physic to preserve health." Many physicians give inadequate attention to what their patients think and feel. Physicians who are able to give such attention find drugs less and less necessary. It is surprising how many drugs rational psychosomatic treatment can replace. Many physicians forget that when patients are not allowed to talk about many things that are hard to express, these things become repressed and cause explosion—behavioral or somatic.

New patients usually want to be given something to read. When this happens, never recommend a psychiatric or psychoanalytic book unless there is a very good reason for doing so. Recommend popular articles which indicate some appreciation of the psychosomatic approach to treatment This will help the patient feel less alone and separated from society. But best of all, recommend a good book on child development.*

Patients reading about the problems of children or discussing children will remember their own relevant early experiences and talk about them more freely. The points they "don't understand" usually have a direct bearing on the things that they have never understood while they were attempting to grow up. Never expect to do more than relieve chronic illness syndromes or even most of the others until the patient has been given an opportunity to discuss what he thinks has made him sick. Only when this has been done, is the physician in a favorable position to replace sickness by health.

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* For example, *Behavior of the Pre-School Child*, by Werner Wolff, Grune & Stratton, 1946, or Flanders Dunbar: *Care and Rearing of Parents*, Columbia University Press. To be published.

Granted that the patient is to be given an opportunity to talk, use of the personality profile may be of great assistance to the physician in directing his conversation. Just talking, without some help from the doctor in focusing attention on "the actual points of irritation" affords at best only temporary relief. The physician's success in helping the patient focus his attention depends in considerable degree on the way he looks to the patient.*

If the patient is really ill and the physician finds very little wrong except organ dysfunction, it is probable that the physician has not helped the patient tell his story. When this happens, the physician need not necessarily send his patient to a psychiatrist. He may instead change his technique and tell the patient frankly what he thinks is wrong, that is, that there is something that the patient has forgotten or has not wished to discuss. If the physician-patient relationship has been established on a sound basis, the patient will probably "suddenly remember." In cases where this does not happen the physician may ask the patient frankly what he thinks of him. If the physician is objective, the patient's answer may provide important clues for treatment, even though some of it may be uncomplimentary to the physician. The physician experienced in these techniques must teach his patients the reverse of the old adage: "What you don't know won't hurt you." It is what you *do* know that does not hurt as long as you are able to understand it and make use of it. Similarly, the physician must learn to make use of the ungratifying comments that some patients need to make about their physician. The most annoying and unappreciative patient will benefit if the physician helps him to understand why he behaves as he does because the patient himself is never completely sure whether he is right or wrong. His misimpressions often make him more uncomfortable than his pneumonia. Today, physicians, like priests, are beginning to discover that they are more successful when they do not place themselves too much in the role of God or some other authority of whom the patient may be afraid.

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* Dunbar, F.: *Psychosomatic Diagnosis*, New York, 1943, Paul B. Hoeber, Inc., pp. 682-683.

Finally, the physician may in such ways lead the patient to understand that he himself can assist in his own recovery, not merely by taking pills and following directions, but also through understanding and changing behavior patterns which may have increased his susceptibility to a given illness, or which perhaps have caused it. It is a great addition to the physician's armamentarium to learn techniques of enlisting his patient's cooperation. Much has been done in the last three years to relieve physicians' ignorance and feeling of helplessness in dealing with the emotional component in illness.

Prolegomena

Why people come to hospitals sick with "no demonstrable signs of organic disease" still remains a mystery, although it may be said conservatively that we have some clues. Rolan Main who wrote a synopsis of physiology in this series has as his concluding chapter "Physiology of Miscellaneous Systems, Functions, and Organs." In the last paragraph of this chapter, he states that "the cause of senescence is unknown since cells in vitro appear to be immortal." What organisms, especially human organisms, do to their immortal cells in vivo remains a challenge to medicine.

BIBLIOGRAPHY

Introduction

1. Deutsch, F.: Die Bedeutung psychoanalytischer Kentnisse fuer die Innere Medizin. Mitt. d. Gesellsch. f. inn. Med. u. Kinderh. in Wien **21**, 1922, 23-24.
2. Draper, G.: Disease; Psychosomatic Reaction, J. A. M. A. **90**: 1281-1285, 1928.
3. Dunbar, F.: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press.
4. ————, and Arlow, J.: Criteria for Therapy in Psychosomatic Disorders, Psychosom. Med. **6**: 283-286, 1944.
5. ————: Psychosomatic Diagnosis, New York, 1943, Paul B. Hoeber, Inc.
6. Dunn, W.: Gastroduodenal Disorders: A Wartime Problem, Contemporary Psychopathology, Ed. S. S. Tomkins, Cambridge, 1943, Harvard University Press, pp. 175-194.
7. Ferenczi, S.: Von Krankheits-oder Patho-neurosen, Internat. Ztschr. f. aerztl. Psychoanal. **4**: 1916-1917.
   a. Disease or Pathoneurose, Internat. Psychoanalyt. Library, No. 11, 1926.
8. Freud, S.: Selected Papers on Hysteria. Translated by J. Rickman, London, 1909, Hogarth Press.
9. Gantt, W. H.: Experimental Basis for Neurotic Behavior, sponsored by the American Society for Research in Psychosomatic Problems, New York, 1944, Paul B. Hoeber, Inc.
10. Groddeck, G.: Die psychische Bedingtheit und psychoanalytische Behandlung organischer Leiden. Berlin, 1917, S. Hirzel.
11. ————: Ueber die Psychoanalyse der Organischen im Menschen, Intern. Ztschr. f. Psychoanal. **7**: 252-263, 1921.
12. Halliday, J. L.: The Incidence of Psychosomatic Affections in Britain, Psychosom. Med. **7**: 135-146, 1945.
13. Hollos, S., and Ferenczi, S.: Psychoanalysis and Psychic Disorder of General Paresis, Nerv. & Ment. Dis. Monogr. No. 42, 1925.

14. Jelliffe, S. E.: The Epileptic Attack in Dynamic Pathology, New York Med. J. **108**: 139-143, 1918.

15. ————: The Psyche and the Vegetative Nervous System With Special Reference to Some Endocrinopathies, New York Med. J., **115**: 382-387, 1922.

16. Liddell, H. S., Anderson, O. D., Kotyuka, E., and Hartman, F. A.: Effect of Extract of Adrenal Cortex on Experimental Neurosis in Sheep,' Arch. Neurol. & Psychiat. **34**: 973-993, 1935.

17. Masserman, J. H.: Behavior and Neurosis: An Experimental Psychoanalytic Approach to Psychobiologic Principles, Chicago, 1943, University of Chicago Press.

18. Pearse, I. H., and Crocker, L. H.: The Peckham Experiment: A Study in the Living Structure of Society, London, 1943, George Allen & Unwin, Ltd.

19. Spitz, R. A.: Psychosomatic Principles and Methods and Their Clinical Application, M. Clin. North America **28**: 553-564, 1944.

Chapter I

No Bibliography.

Chapter II

20. Adair, F. L., and Thelander, H.: Weight and Dimensions of Human Placenta in its Relation to Weight of Newborn Infant, Am. J. Obst. & Gynec. **10**: 172-205, 1925.

21. Bauer, J.: Constitution and Disease, New York, 1942, Grune & Stratton, Inc.

22. Barcroft, J.: The Brain and Its Environment, New Haven, 1938, Yale University Press.

23. Beadle, G.: Amer. Scientist **34**: 31, 1946.

24. Brozek, J., Guetzkow, H., and Keys, A.: Study of Personality of Normal Young Men Maintained on Restricted Intakes of Vitamins of B Complex, Psychosom. Med. **8**: 98-109, 1946.

25. Burke, B. S., Harding, V. V., and Stuart, H. C.: Nutrition Studies During Pregnancy; Relation of Protein Content of Mother's Diet During Pregnancy to Birth Length, Birth Weight, and Condition of Infant at Birth, J. Pediat. **23**: 506-515, 1943.

26. DeMarsh, Q. B., Windle, W. F., and Alt, H. L.: Blood Volume of Newborn Infant in Relation to Early and Late Clamping of Umbilical Cord, Am. J. Dis. Child. **63**: 1123-1129, 1942.

27. Ebbs, J. H., Tisdall, F. F., and Scott, W. A.: J. Nutrition **22**: 515-526, 1941.

28. Gordon, W. H.: Ohio State M. J. **32**: 540-542, 1936.
29. Gray, S. H., and Feemster, L. C.: Arch. Path. & Lab. Med. **1**: 348-355, 1926.
30. Greene, R. R., Burrill, M. W., and Ivy, A. C.: Am. J. Obst. & Gynec. **36**: 1038-1046, 1938.
31. Hale, F.: Am. J. Ophth. **18**: 1087-1093, 1935.
32. Heilberg, K. A.: Virchows Arch. **287**: 629, 1932-1933.
33. Hendrick, I.: In a personal communication to Dr. L. W. Sontag.
34. Hines, E. A., Jr.: Ann. Int. Med. **11**: 593-601, 1937.
35. Huggins, C. V.: J. of Gen. Psych. **8**: 3, 1933.
36. Jost, Hudson, and Sontag, L. W.: Unpublished work.
37. Menzies, R.: J. Exper. Psychol. **29**: 457-482, 1941.
38. Mosher, H. P.: Laryngoscope **48**: 361-395, 1938.
39. Newberry, H.: In a Paper presented at AAAS Meeting in Philadelphia, December, 1940.
40. Patterson, W. B., Hunt, H. F., and Nicodemus, R. E.: West. J. Surg. **45**: 486-499, 1937.
41. ————: West. J. Surg. **47**: 273-276, 1939.
42. Preyer, W.: Spezielle Physiologie des Embryo, Leipzig, 1885, Grieben.
43. Ratner, B., and Greenburgh, J. E.: J. Allergy **3**: 149-160, 1932.
44. Ray, W. S.: Child Development, **3**: 175, 1932.
45. Rector, J. M.: J. Pediat. **6**: 161-166, 1935.
46. Sawin, P. B., and Glick, D.: Proc. Nat. Acad. Sc. **29**: 55-59, 1943.
47. Schreiber, F.: J. A. M. A. **111**: 1263-1269, 1938.
48. Schroeder, P. L.: J. A. M. A. **92**: 100-104, 1929.
49. Seegers, W. H.: Am. J. Physiol. **123**: 233-236, 1938.
50. Sontag, L. W., and Wallace, R. F.: Child Development **6**: 253, 1935.
51. ————, and Jost, H.: Unpublished paper.
52. ————, and Munson, P.: Am. J. Physiol. **45**: 517, 1933.
53. ————: Unpublished paper.
54. ————, and Wines, J. L.: Unpublished paper.
55. ————, and Wallace, R. F.: Am. J. Dis. Child. **48**: 1050-1057, 1934.
56. ————: Am. J. Dis. Child. **60**: 621-630, 1940.
57. ————: Psychosom. Med. **7**: 306-310,1945.

58. Spelt, D. K.: In a Paper presented at the Meeting of the APA in Columbus, Ohio, September, 1938.

59. Swanson, W. W., and Iob, V.: Am. J. Obst. & Gynec. **38**: 382-391, 1939.

60. Taylor, H. M.: Arch. Otolaryn. **20**: 790-803, 1934.

61. Teel, H. M.: Am. J. Physiol. **79**: 170, 1925.

62. Toverud, K. U., and Toverud, G.: Norsk mag. f. laegevidensk **92**: 677-695, 1931.

63. Warkany, J., and Nelson, R. C.: Science **92**: 383-384, 1940.

64. ————, and ————: Anat. Rec. **79**: 83-100, 1941.

65. Weiss, E., and English, O. S.: Psychosomatic Medicine, Philadelphia, 1942, W. B. Saunders Company, pp. 10-11.

66. Williams, R. R., and Spies, T. D.: Vitamin B_1 (Thiamin) and Its Use in Medicine, New York, 1938, The Macmillan Company, p. 12.

67. Windle, W. F.: Psychosom. Med. **6**: 155-156, 1944.

Chapter III

68. Bárány, R.: Theorie des kortikalen Mechanismus der Assoziation (des bedingten Reflexes) und des Sukzessivvergleichs, Deutsche Ztschr. f. Nervenh. **124**: 140-147, 1932.

69. Bard, P.: Macleod's Physiology in Modern Medicine, ed. 9, St. Louis, 1941, The C. V. Mosby Company, pp. 165-186.

70. Bayliss, W. M., and Starling, E. H.: The Movements and Innervations of the Small Intestine, J. Physiol. **26**: 125-138, 1901.

71. Brickner, R. M., and Barnum, A. S.: Thought as a Cortical Control, Unpublished manuscript.

72. ————, Rosner, A. A., and Yaskin, H.: Evidences Concerning Neural Groundwork Underlying Certain Behavior Patterns, Psychosom. Med. **5**: 20-26, 1943.

73. ————: Factors in Neural Bases of Intellect and Emotion, Yale J. Biol. Med. **11**: 547-556, 1939.

74. ————, and Stein, A.: Intellectual Symptoms in Temporal Lobe Lesions Including "Déjà Pensée," J. Mt. Sinai Hosp. **9**: 344-348, 1942.

75. ————: The Intellectual Functions of the Frontal Lobes: A Study Based Upon Observation of a Man After Partial Bilateral Frontal Lobectomy, New York, 1936, The Macmillan Company.

76. Cannon, W. B.: Bodily Changes in Pain, Hunger, Fear, and Rage, New York, 1929, D. Appleton & Company, p. 404.

77. ————: The Wisdom of the Body, New York, 1939, W. W. Norton & Company, Inc.

78. Coghill, G. E.: The Structural Basis of the Integration of Behavior, Proc. Nat. Acad. Sc. **16**: 637-643, 1930.

79. ————: Corollaries of the Anatomical and Physiological Study of Amblystoma from the Age of Earliest Movement to Swimming, J. Comp. Neurol. **53**: 147-168, 1931.

80. Davidoff, L. M.: Mental Disorders in Association with Epileptic in Two Patients with Tumor of the Brain, Bull. Neurol. Inst. N. Y. **7**: 260, 1938.

81. Eppinger, H., and Hess, L.: Vagotomie; Klinische Studie, Nervous & Mental Disease Monogr. Series 20, ed. 2, New York, 1917.

82. Erickson, M. H., and Brickner, R. M.: Hypnotic Investigation of Psychosomatic Phenomena; Development of Aphasia-like Reactions From Hypnotically Induced Amnesias, Psychosom. Med. **5**: 59-66, 1943.

83. Fulton, J. F.: Cerebral Regulation of Autonomic Function, Interstate Postgrad. Med. Assembly N. Amer., 1936, b 149-154.

84. Gellhorn, E.: Autonomic Regulations: Their Significance for Physiology, Psychology and Neuropsychiatry, New York, 1943, Interscience Publishers, Inc., p. 373.

85. ————, Cortell, R., and Feldman, J.: The Effect of Emotion, Sham Rage and Hypothalamic Stimulation on the Vago-Insulin System, Am. J. Physiol. **133**: 532-541, 1941.

86. Grinker, R. R., and Spiegel, J. P.: Men Under Stress, Philadelphia, 1945, The Blakiston Company.

87. Head, J.: Die Sensibilitaetsstoerungen der Haut bei Visceralerkrankungen, Berlin, 1889.

88. Jackson, H.: Selected Papers, New York, 1931-1932, James Taylor.

89. Karplus, J. P., and Kreidl, A.: Gehirn und Sympatheticus. I. Pflueg Arch. Ges. und Physiol. **129**: 138-144, 1909; II. Pflueg Arch. Ges. und Physiol. **135**: 401-416, 1910.

90. Kess, W. R.: The Autonomic Nervous System, Lancet **2**: 1199-1201, 1932.

91. Kuntz, A.: On the Occurrence of Reflex Arcs in the Myenteric and Submucous Plexuses, Anat. Rec. **23**: 193-210, 1922.

92. Langley, J. N.: The Autonomic Nervous System, Brain, Lond. **26**: 1-26, 1903.

93. Lashley, K. S.: Basic Neural Mechanisms in Behavior, Psychol. Rev. **37**: 1-24, 1930.

94. Lorente de No, R.: Vestibulo-Ocular Reflex Arc, Arch. Neurol. & Psychiat. **30**: 245-291, 1933.

95. Mackenzie, J.: Some Points Bearing on the Association of Sensory Disorders and Venereal Diseases, Brain, Lond. **16**: 321-354, 1893.

96. ————: The Theory of Disturbed Reflexes in the Production of Symptoms of Disease, Rept. St. Andrews Inst. Clin. Res., 1922, pp. 49-71.

97. Masserman, J.: Is Hypothalamus a Center of Emotions? Psychosom. Med. **3**: 3-25, 1941.

98. Mettler, F. A., Spindler, J., Mettler, C., and Coombs, J. D.: Disturbances in Gastro-Intestinal Function After Localized Ablations of Cerebral Cortex, Arch. Surg. **32**: 618-623, 1936.

99. Ransón, S. W., and Magoun, H. W.: Hypothalamus., Ergebn. d. Physiol. **41**: 56-163, 1939.

100. Ripley, H. S., and Wolf, S.: Intravenous Use of Sodium Amytal in Psychosomatic Disorders, Psychosom. Med. **9**: 260-268, 1947.

101. Ross, J.: On the Segmental Distribution of Sensory Disorders, Brain **10**: 333-361, 1887.

102. Sheehan, D.: Physiological Mechanisms Involved in Gastrointestinal Dysfunction, Psychosom. Med. **6**: 56-57, 1944.

103. Stainbrook, E.: Experimental Induction of Acute Animal Behavior Disorders as a Method of Psychosomatic Research, Psychosom. Med. **9**: 256-259, 1947.

104. Wenger, M. A.: Measurement of Individual Differences in Autonomic Balance, Psychosom. Med. **3**: 427-434, 1941.

105. Wolberg, L.: Hypnotic Experiments in Psychosomatic Medicine, Psychosom. Med. **9**: 337, 1947.

Chapter IV

106. Abraham, K.: I. A Short History of the Development of the Libido. II. Contributions to the Theory of the Anal Character. Selected Papers on Psychoanalysis, London, 1927, Hogarth Press.

107. Alexander, F.: Influence of Psychologic Factors Upon Gastro-Intestinal Disturbances, Psychoanalyt. Quart. **3**: 501-539, 1934.

108. ————: Psychological Aspects of Medicine, Psychosom. Med. **1**: 7-18, 1939.

109. ————, and Menninger, W. C.: Relation of Persecutory Delusions to Functioning of the Gastro-Intestinal Tract, J. Nerv. & Ment. Dis. **84**: 541-554, 1936.

110. Alvarez, W. C.: Ways in Which Emotion Can Affect Digestive Tract, J. A. M. A. **92**: 1231-1237, 1929.

111. Beaumont, W.: Experiments and Observations on the Gastric Juice and the Physiology of Digestion. Plattsburg, 1833, F. P. Allen.

112. Bergmann, A. V.: Das spasmogene ulcus pepticum, Muench. Med. Wchnschr. **60**: 169-174, 1913.

113. Bochefontaine, L. T.: Etude expérimentale de l'influence exerciée par la faradisation de l'écorce grise du cerveau sur quelques fonctions de la vie organique, Arch. Physiol. Norm. Path. (sec. 2) **8**: 140-172, 1876.

114. Brill, A. A.: Anticipations and Corroborations of Freudian Concepts From Nonanalytic Sources, Am. J. Psychiat. **92**: 1127-1135, 1936.

115. Bulatao, E., and Carlson, A. J.: Contributions to Physiology of Stomach; Influence of Experimental Changes in Blood Sugar Level on Gastric Hunger Contractions, Am. J. Physiol. **68**: 107, 1924; Am. J. Physiol. **68**: 148, 1924.

116. Cannon, W. B.: Influence of Emotional States on the Functions of the Alimentary Tract, Am. J. M. Sc. **137**: 480, 1909.

117. ————: Linaire Lecture on Autonomic Nervous System; an Interpretation, Lancet **1**: 1109-1115, 1930.

118. Coriat, I.: Sex and Hunger, Psychoanalyt. Rev. **8**: 375-381, 1921.

119. Cushing, H.: Peptic Ulcers and Interbrain, Surg., Gynec. & Obst. **55**: 1-34, 1932.

120. Draper, G., and Touraine, G.: Man-Environment Unit and Peptic Ulcer, Arch. Int. Med. **46**: 616-662, 1932.

121. Freud, S.: Three Contributions to the Theory of Sex. Basic Writings of Sigmund Freud. New York, 1938, Random House, Inc.

122. ————: On the Transformations of Instincts With Special Reference to Anal Erotism, Collected Papers, vol. 2, London, 1933, Hogarth Press.
————: From the History of an Infantile Neurosis, Collected Papers, vol. 3, London, 1933, Hogarth Press.
————: Instincts and Their Vicissitudes, Collected Papers, vol. 4, London, 1933, Hogarth Press.

123. Groen, J.: Psychogenesis and Psychotherapy of Ulcerative Colitis, Psychosom. Med. **9**: 151-174, 1947.

124. Gull, W.: Anorexia Nervosa, Tr. Clin. Soc., London 7: 22, 1874.

125. Hartman, H. R.: Neurogenic Factors in Peptic Ulcer, M. Clin. North America **16**: 1357-1369, 1933.

126. Jones, C. M., and others: Gastroenterology; a Review of the Literature From January, 1937, to June, 1938, Arch. Int. Med. **62**: 652-718, 1938.

127. Langley, J. N.: The Autonomic Nervous System, Brain **26**: 1-26, 1903.

128. Light, R. U., Bishop, C. C., and Kendall, L. G.: Production of Gastric Lesions in Rabbits by Injection of Small Amounts of Pilocarpine Into Cerebralspinal Fluid, J. Pharmacol. & Exper. Therap. **45**: 227-251, 1932.

129. Lorand, S.: Anorexia Nervosa; Report of a Case, Psychosom. Med. **5**: 282-292, 1943.

130. Menninger, W. C.: Functional Disorders of Gastro-intestinal Tract: "Gastro-intestinal Neuroses," Am. J. Digest. Dis. & Nutrition, **4**: 447-453, 1937.

131. Okada, S., Kuramochi, K., Tsukahara, T., and Ooinoue, T.: Pancreatic Function; Humoroneural Regulation of Gastric Pancreatic and Biliary Secretions, Arch. Int. Med. **43**: 446-471, 1929.

132. Richardson, H. B.: Simmonds' Disease and Anorexia Nervosa, Arch. Int. Med. **63**: 1-28, 1939.

133. Ruesch, J., and others: Chronic Disease and Psychological Invalidism, Psychosom. Med. Monogr. Published with the sponsorship of the Am. Soc. for Res. in Psychosom. Probl., New York, 1946, p. 191.

134. ————: Duodenal ulcer; a Socio-Psychological Study of Naval Enlisted Personnel. Unpublished paper.

135. Silbermann, I. S.: Experimentelle Magen-Duodenalulcuserzeugung durch Scheinfüttern nach Pawlow, Zentralbl. f. Chir. **54**: 2385-2392, 1927.

136. Weiss, E.: Cardiospasm; Psychosomatic Disorder, Psychosom. Med. **6**: 58-70, 1944.

137. Westphal, K.: Untersuchungen zur Frage der nervoesen Entstehung peptischer Ulcer, Deutsches Arch. f. klin. Med. **114**: 327-395, 1914.

138. White, B. V., Cobb, S., and Jones, C. M.: Mucous Colitis, Psychosom. Med. Monogr. I. Published with the sponsorship of the Committee on Problems of Neurological Behavior, Nat. Res. Council, p. 103.

139. Wolf, S., and Wolff, H. G.: Human Gastric Function, New York, 1943, Oxford University Press.

Appendix I

140. van der Heide, C.: Psychological Study of Patients With Ulcerative Colitis, (Unpublished).

141. Lium, R.: Etiology of Ulcerative Colitis; Effect of Induced Muscular Spasm on Colonic Explants in Dogs, Arch. Int. Med. **63**: 210-225, 1939.

142. Murray, C. D.: Psychogenic Factors in Etiology of Ulcerative Colitis and Bloody Diarrhea, Am. J. M. Sc. **180**: 239-248, 1930.

143. Sullivan, A. J., and Chandler, C. A.: Ulcerative Colitis of Psychogenic Origin, Yale J. Biol. & Med. **4**: 779-796, 1932.

Chapter V

144. Abramson, H. A.: Origin of Whealing Response to Cold, Psychosom. Med. **3**: 435-440, 1941.

145. Andrews, G.: Diseases of the Skin for Practitioners and Students, ed. 3, 1946, W. B. Saunders Company.

146. Bloch, B.: As cited in Dunbar: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press, p. 402.

147. Bunneman, O.: As cited in Dunbar: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press, p. 399.

148. Doswald and Kreibich: As cited in Dunbar: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press, p. 379.

149. Drueck, C. J.: Essential Pruritus Perinei, J. Nerv. & Ment. Dis. **97**: 528-534, 1943.

5. Dunbar, F.: Psychosomatic Diagnosis, New York, 1943, Paul B. Hoeber, Inc., p. 50.

150. Fenichel, O.: The Psychoanalytic Theory of Neurosis, 1945, W. W. Norton & Company, Inc., p. 70.

151. Gillespie, R. D.: Psychological Aspects of Skin Diseases, Brit. J. Dermat. **50**: 1-16, 1938.

152. Grant, R. T., Pearson, R. S. B., and Comeau, W. J.: Observations on Urticaria Provoked by Emotion, Exercise, and Warming the Body, Clin. Sci. **2**: 253, 1936.

153. Harris, H. J.: Fungus Infection of Feet, Psychosom. Med. **6**: 336-337, 1944.

154. Heilig and Hoff: As cited in Dunbar: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press, p. 383.

155. Hopkins, J. G., Kesten, B. M., and Hazel, D. G.: Urticaria Provoked by Heat or by Psychic Stimuli, Arch. Derm. & Syph. **38**: 679-691, 1938.

156. Kalz, F.: Psychological Factor in Skin Disease, Canad. M. A. J. **53**: 247-253, 1945.

157. Kartamischew, A.: As cited in Dunbar: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press, p. 401.

158. Klaber, R., and Wittkower, E.: Pathogenesis of Rosacea, Brit. J. Dermat. **51**: 501-524, 1939.

159. Kuno, Y.: The Physiology of Human Perspiration, London, 1934, J. & A. Churchill, Ltd.

160. Lynch, F. W., Hinckley, R. G., and Cowan, D. W.: Psychosomatic Studies in Dermatology, Arch. Dermat. & Syph. **51**: 251-260, 1945.

161. Miller, M. L.: Psychological Study of a Case of Eczema and Case of Neurodermatitis, Psychosom. Med. **4**: 82-93, 1942.

162. Mittelmann, B., and Wolff, H. G.: Emotions and Skin Temperature, Psychosom. Med. **5**: 211-231, 1943.

163. Naber, J.: As cited in Dunbar: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press, p. 393.

164. Obermayer, M. E.: Functional Factors in Common Dermatoses, J. A. M. A. **122**: 862-864, 1943.

165. Rogerson, C. H.: Psychological Factors in Skin Diseases, Practitioner **142**: 17-35, 1939.

166. Rosenbaum, M.: Psychosomatic Factors in Pruritus, Psychosom. Med. **7**: 52-57, 1945.

167. Rothman, S.: Role of Autonomic Nervous System in Cutaneous Disorders, Psychosom. Med. **7**: 90-96, 1945.

168. Sack, W. T.: As cited in Dunbar: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press, pp. 372-373.

169. Sadger, J.: As cited in Dunbar: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press, pp. 386-387.

170. Saul, L. J.: Incidental Observations on Pruritus Ani, Psychoanalyt. Quart. **7**: 336-337, 1938.

171. ————, and Bernstein, C., Jr.: Emotional Settings of Some Attacks of Urticaria, Psychosom. Med. **3**: 349-369, 1941.

172. Schilder, P.: Remarks on Psychophysiology of Skin, Psychoanalyt. Rev. **23**: 274-285, 1936.

173. Stokes, J. H.: Effect on Skin of Emotional and Nervous States, Arch. Dermat. & Syph. **22**: 803-810, 1930.

174. ————, and Beerman, H.: Psychosomatic Correlations in Allergic Conditions, Psychosom. Med. **2**: 438-458, 1940.

175. Sulzberger, M. B., and Garbe, W.: Nine Cases of Distinctive Exudative Discoid and Lichenoid Chronic Dermatosis, Arch. Dermat. & Syph. **36**: 247-272, 1937.

176. Vollmer, H.: Treatment of Warts by Suggestion, Psychosom. Med. **8**: 138-142, 1946.

177. Wittkower, E.: The Psychological Aspects of Skin Disease, Directorate of Army Psychiatry, Research Memorandum, 43/14. (Personal communication to Dr. Dunbar).

Chapter VI

178. Briggs, E. F.: The Psychogenic Factors in Dental Caries, Dent. Digest **50**: 115, 1944.

179. Burstone, M. S.: Psychosomatic Aspects of Dental Problems, J.A.D.A. **33**: 862, 1946.

180. Campbell, D. G.: Psychosomatic Mechanisms in Oral Diseases, Am. J. Orthodontics (Oral Surg. Sect.) **31**: 440-446, 1945.

3. Dunbar, F.: Emotions and Bodily Changes, ed. 3, Columbia University Press, New York, 1946.

181. Ferenczi, S.: Zur Augensymbolik, Internat. Ztschr. f. aerztl. Psychoanal. **1**: 161-164, 1913.

182. Freud, S.: Psychogenic Visual Disturbance According to Psychoanalytical Conception, Collected Papers vol. 2, London, 1924, L. & V. Woolf, pp. 105-112.

183. Frohman, B. S.: Occlusal Neuroses; Application of Psychotherapy to Dental Problems, Psychoanalyt. Rev. **19**: 297-309, 1932.

184. Glaser, F.: Blood Calcium in the Neurotics, Med. Klinik. **20**: 1237-1240, 1924.

185. Gottlieb, B.: Peridontal Diseases, J. Am. Dent. A. **29**: 955-959, 1942.

186. Graven, P. S.: A Series of Clinical Notes on Headache, Psychoanalyt. Rev. **11**: 324, 1924.

86. Grinker, R. R., and Spiegel, J. P.: Men under Stress, Philadelphia, 1945, The Blakiston Company.

187. Groddeck, G.: Klinische Mitteilungen aus einer 20 jaehrigen psychotherapeutischen Praxis, Ber. ueb. d. II. Allg. aerztl. Kongr. f. Psychotherapie, Leipzig, 1928; Hirzel, 1929, pp. 130-140.

188. Harrington, D. O.: Occular Manifestations of Psychosomatic Disorders, J. A. M. A. **133**: 669-674, 1947.

189. Halliday, J. L.: Concept of Psychosomatic Affection, Lancet **2**: 692-696, 1943.

190. Hart, V. S.: Round Table Discussion at Meeting of Amer. Acad. of Peridontology, Sept., 1945, Birmingham, Ala.

191. Henry and Ebeling: Blood Calcium and Phosphorus in Personality Disorders, Arch. Neurol. & Psychiat. **16**: 48, 1926.

192. Hüfler, R.: Ueber die Katatonischen Anfaelle, Allg. Ztschr. f. Path. **65**: 469, 1908.

193. Knapp, A.: Koerperliche Symptome bei functionellen Psychosen, Arch. f. Psychiat. **44**: 709, 1908.

194. Landa, J. S.: Some Aspects of Psychosomatic Medicine and Dentistry, (In preparation) 1946.

195. Means, J. H.: The Thyroid and Its Diseases, Philadelphia, 1937, J. P. Lippincott Company.

196. Miller, S. C.: Oral Diagnosis and Treatment, ed. 2, Philadelphia, 1946, The Blakiston Company.

197. Motivation and Visual Factors: Individual Studies of College Students. Hanover, 1942, Dartmouth College Publications.

198. Neilson, C. H.: Emotional and Psychic Factors in Disease, J. A. M. A. **89**: 1020-1023, 1927.

199. Pelzman, O.: Unpublished Manuscript.

200. Preston, J. L.: Dental Treatment of Focal Infection in Mental Disease, Texas Dent. J. **52**: 63, 1941.

201. Rittenberg, L.: Personal Communication to S. C. Miller.

202. Rubinstein, H. S.: The Use of Hypnosis in Neuropsychiatric Practice, Paper presented at the A. P. A. Meeting, New York, May, 1947.

203. Ryan, E. J.: Psychobiologic Foundations in Dentistry, Springfield, Ill., 1946, Charles C Thomas.

204. Sachs, H. V.: Ztjschr. f. Zahnfleuk, **42**: 508, 1926.

205. Schoenberg, M. J.: Rôle of States of Anxiety in Pathogenesis of Primary Glaucoma, Arch. Ophth. **23**: 76-90, 1940.

————: Psychosomatic Interrelations; Their Therapeutic Implications in Glaucoma, Arch. Ophth. **23**: 91-103, 1940.

206. Selling, L. S., and Ferraro, M. A.: The Psychology of Diet and Nutrition, New York, 1945, W. W. Norton & Company, Inc.

207. Sperensky, A. D.: A Basis for the Theory of Medicine, New York, 1947, The International Publisher.

208. Starr, H. H.: Am. J. Psychiat. **33**: 394, 1922.

209. Strongin, E. I., and Hinsie, L. E.: Parotid Gland Secretions in Manic-depressive Patients, Am. J. Psychiat. **94**: 1459-1466, 1938.

210. ————, and ————: Parotid Secretory Rate in Schizophrenic Patients, J. Nerv. & Ment. Dis. **87**: 715-724, 1928.

211. Thoma, K. H.: Oral Diagnosis With Suggestions for Treatment, ed. 2, Philadelphia, 1943, W. B. Saunders Company, pp. 146, 154.

212. Tischler, B.: Occlusal Habit Neuroses, Dent. Cosmos **70**: 690, 1928.

213. Weiss, E.: Psychosomatic Aspects of Dentistry, J. Am. Dent. A. **31**: 215-220, 1944.

214. ————, and English, O. S.: Psychosomatic Medicine, Philadelphia, 1943, W. B. Saunders Company.

215. Wittkower, E., and others: "Night-Blindness"—A Psycho-Physiological Study, Brit. M. J. **2**: 571, 607, 1941.

216. Wolf, W.: Endocrinology in Modern Practice, ed. 2, Philadelphia, 1939, W. B. Saunders Company.

217. Woodyatt, R. T.: Psychic and Emotional Factors in General Diagnosis and Treatment, J. A. M. A. **89**: 1013-1014, 1927.

218. Ziskin, D. E., and Moulton, R.: Glossodynia, Study of Idiopathic, Orolingual Pain, J. A. D. A. **33**: 1422, 1946.

Chapter VII

1. Diabetes Mellitus

219. Albright, F.: Cushing's Syndrome—Its Pathological Physiology, Harvey Lectures, 1942-1943, pp. 123-186.

220. Barahal, H. S., and Freeman, N.: Sudden Graying of the Hair, Alopecia, and Diabetes Mellitus of Psychogenic Origin, Psychiatric Quart, **20**: 31-38, 1946.

221. Bruce, J. W.: Free Diet in Juvenile Diabetes, South. M. J. **37**: 34-37, 1944.

222. Colwell, A. R.: Observed Course of Diabetes Mellitus and Inferences Concerning Its Origin and Progress, Arch. Int. Med. **70**: 523-531, 1942.

223. Daniels, G. E.: Emotional and Instinctual Factors in Diabetes Mellitus, Am. J. Psychiat. **93**: 711-724, 1936.

224. ————: Present Trends in the Evaluation of Psychic Factors in Diabetes Mellitus, J. Ment. Sc. **81**: 332, 1935.

225. ————: Analysis of Case of Neurosis with Diabetes Mellitus, Psychoanalyt. Quart. **5**: 513-547, 1936.

226. ————: Brief Psychotherapy in Diabetes Mellitus, Psychiatry **7**: 121-128, 1944.

5. Dunbar, F.: Psychosomatic Diagnosis, New York, 1943, Paul B. Hoeber, Inc.

227. ————, Wolfe, T. P., Tauber, E. S., and Brush, A. L.: Psychic Component of Disease Process (Including Convalescence), in Cardiac, Diabetic and Fracture Patients, Am. J. Psychiat. **95**: 1319-1342, 1939.

3. ————: Emotions and Bodily Changes, ed. 2, New York, 1938, Columbia University Press.

228. Duncan, G. G.: Diseases of Metabolism, Philadelphia, 1942, W. B. Saunders Company.

229. Draper, G., Dupertuis, C. W., and Caughey, J. L.: Differentiation by Constitutional Methods Between Pancreatic Diabetes and Diabetes of Pituitary Origin, Tr. A. Am. Physicians **55**: 146-153, 1940.

230. Feinblatt, H. M.: Alpert, B. B., and Ferguson, E. A., Jr.: Juvenile Diabetes Insulin Sensitivity, J. Lab. & Clin. Med. **29**: 366-371, 1944.

231. Frohlich, M. M.: "Uncooperative" Juvenile Diabetic, Univ. Hosp. Bull., Ann Arbor **9**: 3-4, 1943.

232. Grinker, R. R.: Hypothalamic Functions in Psychosomatic Interrelations, Psychosom. Med. **1**: 19-47, 1939.

233. Himsworth, H. F., and Kerr, R. B.: Insulin-Sensitive and Insulin-Insensitive Types of Diabetes Mellitus, Clin. Sc. **4**: 119-152, 1939.

233A. Houssay, B. A.: Diabetes as a Disturbance of Endocrine Regulation, Am. J. M. Sc. **193**: 581, 1937.

234. Joslin, E. P., and others: Treatment of Diabetes Mellitus, ed. 7, Philadelphia, 1940, Lea & Febiger.

235. Long, C. N. H., Duncan's Diseases of Metabolism, Philadelphia, 1942, W. B. Saunders Company.

236. Menninger, W. C.: Psychological Factors in Etiology of Diabetes, J. Nerv. & Ment. Dis. **81**: 1-13, 1935.

237. ————: The Interrelationships of Mental Disorder and Diabetes Mellitus, J. Ment. Sc. **81**: 332-357, 1935.

238. Meyer, A., Bollmeier, L. N., and Alexander, F.: Correlation Between Emotions and Carbohydrate Metabolism in 2 Cases of Diabetes Mellitus, Psychosom. Med. **7**: 335-341, 1945.

239 Newburgh, L. H., Conn, J. W., Johnson, M. W., and Conn, E. S.: New Interpretation of Diabetes Mellitus in Obese, Middle-aged Persons, Tr. A. Am. Physicians **53**: 245-257, 1938.

240. ————: Obesity, Arch. Int. Med. **70**: 1033-1096, 1942.

241. ————: Cause of Obesity, J. A. M. A. **92**: 1659-1663, 1931.

242. ————, and Camp, C. D.: Influence of Anxiety States on Thyroid Gland, Ann. Clin. Med. **4**: 1006-1011, 1926.

243. Pincus, G., and White, P.: On Inheritance of Diabetes Mellitus: Analysis of 675 Family Histories. Am. J. M. Sc. **186**: 1-14, 1933.

244. Selye, H.: The Alarm Reaction, Piersol's Cyclopedia of Medicine and Surgery, Philadelphia, 1940, F. A. Davis Co.

245. Soskin, S., and Levine, R.: Carbohydrate Metabolism, Chicago, 1946, University of Chicago Press.

246. Tolstoi, E.: Newer Concepts in Treatment of Diabetes Mellitus With Protamine Insulin, Am. J. Digest. Dis. **10**: 247-253, 1943.

247. Weiss, E., and English, O. S.: Psychosomatic Medicine, Philadelphia, 1943, W. B. Saunders Company.

248. White, P.: Endocrine Manifestations in Juvenile Diabetes, Arch. Int. Med. **63**: 39-53, 1939.

249. Woodyatt, R. T.: Cecil's Textbook of Medicine, Philadelphia, 1943, W. B. Saunders Company.

2. Spontaneous Hypoglycemia

250. Abrahamson, E. M.: Hyperinsulinism as Factor in Peptic Ulcer, Am. J. Digest. Dis. **12**: 379-382, 1945.

251. Alexander, F., and Portis, S. A.: Psychosomatic Study of Hypoglycaemic Fatigue, Psychosom. Med. **6**: 191-206, 1944.

252. Bercovitz, Z., and Page, R. C.: Metabolic and Vitamin Studies in Chronic Ulcerative Colitis, Ann. Int. Med. **20**: 239-254, 1944.

226. Daniels, G. E.: Brief Psychotherapy in Diabetes, Psychiatry, **7**: 121, 1944.

225. ————: Analysis of a Case of Neurosis with Diabetes Mellitus, Psychoanalyt. Quart. **5**: 513, 1936.

253. Darrow, C. W.: Physiological and Clinical Tests of Autonomic Function and Autonomic Balance, Physiol. Rev. **23**: 1-36, 1943.

254. Davis, P. A.: Effect on Electroencephalogram of Changing Blood Sugar Level, Arch. Neurol. & Psychiat. **49**: 186-194, 1943.

255. Donnelly, G. L., and Palmer, Y. S.: Functional Hypoglycemia, South. Med. & Surg. **106**: 363-364, 1944.

228. Duncan, G. G.: Diseases of Metabolism, Philadelphia, 1942, W. B. Saunders Company.

3. Dunbar, F.: Emotions and Bodily Changes, ed. 2, New York, 1938, Columbia University Press.

256. Frank, J. D.: Atropine Treatment of Hypoglycemia Fatigue States, Psychiatric Quart. **20**: 674, 1946.

257. Gilbert, R. A., and Goldzieher, T. W.: The Mechanism and Prevention of Cardiovascular Changes Due to Insulin, Ann. Int. Med. **25**: 928, 1946.

232. Grinker, R. R.: Hypothalamic Functions in Psychosomatic Interrelations, Psychosom. Med. **1**: 19-47, 1939.

258. Harrison, T. R., and Finks, R. M.: Glucose Deficiency as Factor in Production of Symptoms Referable to Cardiovascular System, Am. Heart J. **26**: 147-163, 1943.

259. Himwich, H. E.: Review of Hypoglycemia, Its Physiology and Pathology, Symptomatology and Treatment, Am. J. Digest. Dis. **11**: 1-8, 1944.

260. Lieberman, A. A.: Nervous and Mental Manifestations Observed in Spontaneous Hypoglycaemia, Illinois M. J. **85**: 287-292, 1944.

261. Portis, S. A., and Zitman, I. H.: Mechanism of Fatigue in Neuro-Psychiatric Patients, J. A. M. A. **121**: 569-573, 1943.

262. Rennie, T. A. C., and Howard, J. E.: Hypoglycemia and Tension-Depression, Psychosom. Med. **4**: 273-282, 1942.

263. Romano, J., and Coon, G. P.: Physiologic and Psychologic Studies in Spontaneous Hypoglycemia, Psychosom. Med. **4**: 283-300, 1942.

264. Rubin, M. A., and Turner, E.: Blood Sugar Level and Influence of Hyperventilation on Slow Activity in Electroencephalogram, Proc. Soc. Exper. Biol. & Med. **50**: 270-272, 1942.

245. Soskin, S., and Levine, R.: Carbohydrate Metabolism, Chicago, 1946, University of Chicago Press.

265. ————: Discussion of paper by A. A. Lieberman, Illinois M. J. **85**: 287, 1944.

266. Wilder, R. M.: Clinical Diabetes Mellitus and Hyperinsulinism, Philadelphia, 1940, W. B. Saunders Company.

267. Wilder, J.: Psychological Problems in Hypoglycemia, Am. J. Digest. Dis. **10**: 428-435, 1943.

3. Cushing's Syndrome

219. Albright, F.: Cushing's Syndrome—Its Pathological Physiology, Harvey Lectures, 1942-1943.

268. Bland, P. B., and Goldstein, L.: Pituitary Basophilism; Review of 42 Verified Cases With Report of Personal Case, Surg. Gynec. & Obst. **65**: 644-656, 1937.

269. Cushing, H.: Basophil Adenomas of Pituitary Body and Their Clinical Manifestations (Pituitary Basophilism), Bull. Johns Hopkins Hosp. **50**: 137-195, 1932.

270. Cutting, W. C., Cox, A. J., Jr., and Laqueur, G. L.: Cushing's Syndrome and Related Conditions, Stanford M. Bull. **3**: 1-12, 1945.

271. Friedgood, H. B.: Endocrine Functions of the Hypophysis, Oxford Medicine, vol. 3, pt. 3, chap. 14, New York, 1945, Oxford University Press.

272. Heinbecker, P.: Pathogenesis of Cushing's Syndrome, Medicine **23**: 225-247, 1944.

273. Kepler, E. J.: The Relationship of "Crooke's Changes" in the Basophile Cells of the Anterior Pituitary Body to Cushing's Syndrome (Pituitary Basophilism).

274. Maclay, W. S., Stokes, A. B., and Russell, D. S.: Mental Disorder in Cushing's Syndrome, With Pathological Report, J. Neurol. & Psychiat. **1**: 110-119, 1938.

275. Schlezinger, N. S., and Horwitz, W. A.: Neuropsychiatric Disorders Occurring in Cushing's Syndrome Pituitary Basophilism, Am. J. Psychiat. **96**: 1213-1226, 1940.

244. Selye, H.: The Alarm Reaction, Piersol's Cyclopedia of Medicine and Surgery, vol. 15, Philadelphia, 1940, F. A. Davis Co., p. 15.

278. Teel, H. M.: Basophilic Adenoma of Hypophysis With Associated Pluriglandular Syndrome; Report of Case, Arch. Neurol. & Psychiat. **26**: 593-599, 1931.

4. Hyperthyroidism

279. Astwood, E. B.: Chemotherapy in Hyperthyroidism, The Harvey Lectures 1944,-1945, p. 195; *also,* Surgery **16**: 679-687, 1944.

280. Boothby, W. M., and Baldes, E. J.: Activation and Decay Curves of Thyroxin, Proc. Staff Meet., Mayo Clinic **1**: 166, 1926.

281. Boyd, Wm.: The Pathology of Internal Diseases, ed. 3, Philadelphia, 1940, Lea & Febiger.

282. Conrad, A.: Psychiatric Study of Hyperthyroid Patients, J. Nerv. & Ment. Dis. **79**: 505, 1934.

283. DeCourcy, J. L.: Maintenance of a Normal Basal Metabolic Rate After Thyroidectomy, Trans. Am. Assoc. Study of Goiter, 1941, pp. 28-31; *also* J. Med. **22**: 250-252, 1941; *also,* West. J. Surg. **49**: 419-422, 1941.

3. Dunbar, F.: Emotions and Bodily Changes, ed. 2, New York, 1938, Columbia University Press.

284. Draper, G., Dupertuis, C. W., and Caughey, J. L.: Human Constitution in Clinical Medicine, New York, 1944, Paul B. Hoeber, Inc.

285. Friedgood, H. B.: Endocrine Functions of the Hypophysis, Oxford Medicine, New York, 1945, Oxford University Press, vol. 3, pt. 3, chap. 14.

232. Grinker, R. R.: Hypothalamic Functions in Psychosomatic Interrelations, Psychosom. Med. **1**: 19-47, 1939.

286. Lorand, A., and Moschcowitz, E.: A Psychoanalytic Interpretation of the Constitution in Graves' Syndrome, J. Nerv. & Ment. Dis. **79**: 136, 1934.

287. Means, J. H.: The Thyroid and Its Diseases, Philadelphia, 1937, J. B. Lippincott Company.

288. ————: Nature of Graves' Disease With Special Reference to Its Ophthalmic Component, Am. J. M. Sc. **207**: 1-19, 1944.

289. ————: Evaluation of the Several Methods for Treating Graves' Disease Available Today, Ann. Int. Med. **25**: 403, 1946.

290. Mittelmann, B.: Psychogenic Factors and Psychotherapy in Hyperthyreosis and Rapid Heart Imbalance, J. Nerv. & Ment. Dis. **77**: 465-488, 1933.

291. Moschcowitz, E., and Bernstein, S. S.: Relation of Neurocirculatory Asthenia to Graves' Disease, Am. Heart J. **28**: 177-198, 1944.

292. ————: Essays on Biology of Disease; Biology of Graves' Disease, J. Mt. Sinai Hosp. **12**: 828-832, 1945.

293. Paschkis, K. E.: Treatment of Thyrotoxicosis With Thiouracil, M. Clin. North America, **28**: 1362-1375, 1944.

294. Preston, F. W., and Thompson, W. O.: Persistence and Recurrence of Toxic Goiter Following Subtotal Thyroidectomy, Arch. Int. Med. **69**: 1019-1039, 1942.

295. Rienhoff, W. F., Jr.: Diseases of the Thyroid Gland. Lewis' Practice of Surgery, vol. 6, Hagerstown, W. F. Prior Company, Inc., p. 28, et seq.

296. Warthin, A. S.: The Constitutional Entity of Exophthalmic Goiter and So-Called Toxic Adenoma, Ann. Int. Med. **2**: 553, 1927.

247. Weiss, E., and English, O. S.: Psychosomatic Medicine, Philadelphia, 1943, W. B. Saunders Company.

297. Wilensky, A. O.: Modern Treatment of Thyrotoxicosis, Med. Rec. **155**: 495-497, 1942.

5. Obesity

298. Alexander, F.: Diseases of the Digestive System, ed. 5, Portis, Philadelphia, 1941, Lea & Febiger.

299. ————: The Influence of Psychological Factors Upon Gastro-Intestinal Disturbances. Contemporary Psychopathology, ed. S. S. Tomkins, Cambridge, 1943, Harvard University Press, p. 123.

300. Bauer, J.: Constitution and Disease, New York, 1945, Grune & Stratton, Inc.

301. Brobek, J. R.: Mechanism of the Development of Obesity in Animals With Hypothalamic Lesions, Physiol. Rev. **26**: 541, 1946.

302. Bruch, H.: Obesity in Childhood: 1. Physical Growth and Development of Obese Children, Am. J. Dis. Child. **58**: 457-484, 1939.

————: III. Physiologic and Psychologic Aspects of Food Intake of Obese Children, Am. J. Dis. Child. **59**: 739-781, 1940.

————: IV. Energy Expenditure of Obese Children, Am. J. Dis. Child. **60**: 1082-1109, 1940.

————, and Touraine, G.: V. Family Frame of Obese Children, Psychosom. Med. **2**: 141-206, 1940.

303. ————: Psychiatric Aspects of Obesity in Children, Am. J. Psychiat. **99**: 752-757, 1943.

304. Evans, F. A.: Diseases of Metabolism, ed. G. G. Duncan, Philadelphia, 1942, W. B. Saunders Company.

305. Freud, A., and Burlingham, D. T.: Infants Without Families, New York, 1944, International University Press.

306. Gill, D. J.: Role of Personality and Environmental Factors in Obesity, J. Am. Dietet. A. **22**: 398-400, 1946.

307. Hawirko, L., and Sprague, P. H.: Treatment of Obesity by Appetite-Depressing Drugs, Canad. M. A. J. **54**: 26-29, 1946.

308. Lewis, J. H., and Sarbin, T. R.: Studies in Psychosomatics; Influence of Hypnotic Stimulation on Gastric Hunger Contractions, Psychosom. Med. **5**: 125-131, 1943.

240. Newburgh, L. H.: Obesity, Arch. Int. Med. **70**: 1033-1096, 1942.

309. Nicholson, W. M.: Emotional Factors in Obesity, Am. J. M. Sc. **211**: 443-447, 1946.

310. Reeves, G. H.: Psychological Factors in Obesity, Am. J. Orthopsychiat. **12**: 674-678, 1942.

311. Rennie, T. A. C.: Obesity as a Manifestation of Personality Disturbance, Dis. Nerv. System 1: 238-247, 1940.

312. Ribble, M. A.: The Rights of Infants, New York, 1943, Columbia University Press.

313. Richardson, H. B.: Obesity as a Manifestation of Neurosis, M. Clin. North America, 1187, 1946.

314. ————: Obesity and Neurosis, Psychiatric. Quart. **20**: 400, 1946.

315. Rony, H. R.: Obesity and Leanness, Philadelphia, 1940, Lea & Febiger.

316. Selling, L. S.: Psychopathology and Nutrition, Dis. Nerv. System **4**: 38-42, 1943.

317. ————, and Ferraro, M. A. S.: The Psychology of Diet and Nutrition, New York, 1945, W. W. Norton & Company, Inc.

6. Nutrition and Malnutrition

318. Bartels, E. D.: Studies in Hypometabolism. 1. Anorexia Nervosa, Acta Med. Scandinav. **124**: 185, 1946.

319. Escamilla, R. F., and Lisser, H.: Simmonds' Disease, J. Clin. Endocrinol. **2**: 65-96, 1942.

129. Lorand, S.: Anorexia Nervosa; Report of a Case, Psychosom. Med. **5**: 282-292, 1943.

320. Moulton, R.: A Psychosomatic Study of Anorexia Nervosa Including the Use of Vaginal Smears, Psychosom. Med. **4**: 62, 1943.

321. Nicolle, G.: Pre-psychotic Anorexia, Proc. Roy. Soc. Med. **32**: 153-162, 1939.

322. Rahman, L., Richardson, H. B., and Ripley, H. S.: Anorexia Nervosa With Psychiatric Observations, Psychosom. Med. **1**: 335-365, 1939.

132. Richardson, H. B.: Simmonds' Disease and Anorexia Nervosa, Arch. Int. Med. **63**: 1-28, 1939.

315, Rony, H. R.: Obesity and Leanness, Philadelphia, 1940, Lea & Febiger.

323. Rose, J. A.: Eating Inhibitions in Children in Relation to Anorexia Nervosa, Psychosom. Med. **5**. 117-124, 1943.

317. Selling, L. S., and Ferraro, M. A. S.: The Psychology of Diet and Nutrition, New York, 1945, W. W. Norton & Company, Inc.

324. Sheldon, J. H.: Anorexia Nervosa With Special Reference to Physical.Constitution, Lancet **1**: 369-373, 1937.

325. Waller, J. V., Kaufman, M. R., and Deutsch, F.: Anorexia Nervosa: Psychosomatic Entity, Psychosom. Med. **2**: 3-16, 1940.

247. Weiss, E., and English, O. S.: Psychosomatic Medicine, Philadelphia, 1943, W. B. Saunders Company.

Chapter VIII

326. Alexander, F., and Johnson, W.: Rheumatoid Arthritis, Unpublished ~~address to Am. Soc. for~~ Research in Psychosom. Problems at Atlantic City, 1947.

327. Boland, E. W., and Corr: Psychogenic Rheumatism, J. A. M. A. **123**: 805-809, 1943.

328. Booth, G. C.: Personality and Chronic Arthritis, J. Nerv. & Ment. Dis. **85**: 637-662, 1937.

329. ————: Psychosomatic Aspects of Parkinsonian Disease, Paper delivered at Am. Soc. for Research in Psychosom. Problems, Atlantic City, 1947.

330. Breuer, J., and Freud, S.: Studies in Hysteria, New York, 1936, Nervous and Mental Disease Pub. Co., pp. 126, 232.

331. Burt, J. B., Gordon, R. G., and Aldred-Brown, G. P. R.: Autonomous Nervous System in Rheumatoid Arthritis. A Survey of Chronic Rheumatic Diseases, London, 1938, Oxford University Press, p. 137.

332. Cobb, S., Bauer, W., and Whiting, I.: Environmental Factors in Rheumatoid Arthritis, J. A. M. A. **113**: 668-670, 1939.

333. Comron, B. L.: Arthritis and Allied Condition, Philadelphia, 1944, Lea & Febiger, p. 479.

334. Deutsch, F.: Analysis of Postural Behavior, Psychoanalyt. Quart. **16**: 195, 1947.

5. Dunbar, F.: Psychosomatic Diagnosis, New York, 1943, Paul B. Hoeber, pp. 367, 741.

335. Eisler, M. J.: Uterine Phenomena in Hysterea, Internat. J. Psycho-Analysis **4**: 1923.

336. Ellman, P., and others: Fibrositis, Ann. Rheumat. Dis. **3**: 56-76, 1942.

337. ————, and Mitchell, S. D.: Psychological Aspects of Chronic Rheumatic Joint Disease, Rep. Chron. Rheum. Dis. **2**: 109-119, 1936.

338. Fenichel, O.: The Psychoanalytic Theory of Neurosis, New York, 1945, W. W. Norton & Company, Inc., p. 248.

339. Ferenczi, S.: Thinking and Muscle Innervation. Further Contributions to the Theory and Practice of Psychoanalysis, New York, 1927, Boni & Liveright, Inc., p. 230.

340. ————: Ibid. Position During Treatment, p. 242.

341. Fatterman: Vertebral Neurosis, Psychosom. Med. **2**: 265, 1940.

342. Gordon, R. G.: Nature of Fibrositis and Influence of Psychological States Upon It, Ann. Rheum. Dis. **2**: 89, 1946.

343. ————: Psychological Factor in Chronic Rheumatism, Brit. M. J. **1**: 1165-1169, 1939.

344. Groddeck, G.: The Book of the It, New York, 1928, Nerv. and Ment. Dis. Pub. Co. pp. 123, 239.

345. Halliday, J. L.: Concept of Psychosomatic Rheumatism, Ann. Int. Med. **15**: 666-677, 1941.

346. ————: Psychological Factors in Rheumatism; Preliminary Study, Brit. M. J. **1**: 213, 1937; **1**: 264, 1937.

347. ————: Psychological Approach to Rheumatism, Proc. Roy. Soc. Med. **31**: 167-178, 1938.

348. Jacobson, E.: Progressive Relaxation, Chicago, 1929, University of Chicago Press.

349. Jelliffe, S. E.: Bodily Organs and Psychopathology, Am. J. Psychiat. **92**: 1051-1076, 1936.

350. Jones, E.: Psychology and Childbirth, Lancet **1**: 695-696, 1942.

351. Kelley, M.: Fibrositis and Reality, Ann. Rheumat. Dis. **4**: 46, 1944.

352. Mahler, M. S., and Rangell, L.: Psychosomatic Study of Maladie des Tics, Psychiatric Quart. **17**: 579-603, 1943.

353. McGregor, H. G.: Psychological Factor in Rheumatic Disease, Practitioner, **143**: 627-636, 1939.

354. Menninger, K.: Emotional Factors in Organic Gynecological Conditions, Bull. Menninger Clin. **7**: 36-40, 1943.

355. Nissen, H. A., and Spencer, K. A.: Psychogenic Problems Endocrinal and Metabolic in Chronic Arthritis, New England J. Med. **214**: 576-581, 1936.

356. Patterson, R. M., and others: Studies of Relationship Between Emotional Factors and Rheumatoid Arthritis, Am. J. Psychiat. **99**: 775-780, 1943.

357. Osgood, E. E.: Culture of Human Marrow, Am. J.M.Sc. **200**: 596-603, 1940.

358. Rabiner, A. M., and Keschner, M.: Role of Psychical Factors in Production of Organic Nervous Disease, J. Neurol. & Psychopath. **10**: 311-316, 1930.

359. Ripley, H., Bohnengel, C., and Milhorat, A. T.: Personality Factors in Patients With Muscular Disability, Am. J. Psychiat. **99**: 781-787, 1943.

360. Sandler, A.: Camptocormia, Psychosom. Med. **9**: 497, 1947.

361. Smith, M.: Study of 102 Cases of Atrophic Arthritis, New England J. Med. **206**: 211-216, 1932.

362. Thomas, G. W.: Psychic Factors in Rheumatoid Arthritis, Am. J. Psychiat. **93**: 693-710, 1936.

247. Weiss, E., and English, O. S.: Psychosomatic Medicine, Philadelphia, 1943, W. B. Saunders Company.

363. Wilson, G., Rupp, C., and Bartle, H., Jr.: Emotional Factors in Organic Disease of Central Nervous System, Am. J. Psychiat. **99**: 788-792, 1943.

Chapter IX

364. Alexander, F.: Symposium on Research in Orthopsychiatry, etc., Am. J. Orthopsychiat. **13**: 243, 1943.

365. Braun, L.: Herz und Angst. Eine aerztlich-psychologische Studie. Wien, Deuticke, 1932.

366. Dorfman, W.: Hypertension: Can Anything Be Done About It? N. Y. Physician, 1942.

5. Dunbar, F.: Psychosomatic Diagnosis, New York, 1943, Paul B. Hoeber, Inc.

367. Gordon, W. H., Bland, E. F., and White, P. D.: Coronary Heart Disease Analyzed Postmortem, Am. Heart J. **17**: 10-14, 1939.

368. Heyer, C. R.: Das koerperlich-seelische Zusammenwirken in den Lebensvorgaengen, Muenchen, 1925, Bergmann.

369. Levy, W. O., and others: Reexamination of 4,994 Men Rejected for General Military Service Because of the Diagnosis of Cardiovascular Defects: Individual Reports by the Chairmen of Special Medical Advisory Boards in Five Cities in Which the Combined Study Was Made, Am. Heart J. **27**: 435, 1944.

370. Smithwick, R. H.: The Surgical Treatment of Hypertension, New York State J. Med. **44**: 2693, 1944.

371. Van Dellen, F. B., and others: Vascular Diseases; Ninth Annual Review, Arch. Int. Med. **72**: 518, 1942.

372. Weber, E.: Der Einfluss psychischer Vorgaenge auf den Koerper, insbesondere auf die Blutverteilung, Berlin, 1910, Springer.

373. Wolfe, T. P.: Emotions and Organic Heart Disease, Am. J. Psychiat. **93**: 681-691, 1936.

374. ————: Dynamic Aspects of Cardiovascular Symptomatology, Am. J. Psychiat. **91**: 563-574, 1934.

375. von Wyss, H. W.: Herz und Psyche in ihren Wechselwirkungen, Schweiz. med. Wchnschr. **57**: 433-436, 1927.

Chapter X

375A. Alexander F.: The Medical Value of Psychoanalysis, ed. 2, New York, 1936, W. W. Norton and Company, Inc.

363. ————: Symposium on Research in Orthopsychiatry, Am. J. Orthopsychiat. **13**: 243, 1493.

376. Bibring, E.: Conception of Repetition Compulsion, Psychoanalyt. Quart. **12**: 486-519, 1943.

377. Brown, E. A., and Goitein, P. L.: Some Aspect of Mind in Asthma and Allergy; Comparative Personality Study of 2 Groups of Clinical Cases, J. Nerv. & Ment. Dis. **98**: 638-647, 1943.

378. ————, and ————: Significance of Body Image for Personality Assay, With Special Application in Allergy, J. Nerv. & Ment. Dis. **97**: 404-408, 1943.

379. Daly, C. D.: Hindu-Mythologie und Kastrationskomplex, Imago **13**: 145-198, 1927.

380. ————: Der Menstruationskomplex, Imago **14**: 11-75, 1928.

381. Day, C.: Observations on the Psychology of the Tuberculous, Lancet **2**: 20, 706, 1946.

3. Dunbar, F.: Emotions and Bodily Changes, ed. 3, New York, 1946, Columbia University Press.

382. Eyre, M. B.: The Role of Emotion in Tuberculous, Am. Rev. Tuberc. **27**: 315, 1933.

383. Fenichel, O.: Outline of Clinical Psychoanalysis Translated by B. Lewin and G. Zilborg, New York, 1934, Psychoanalyt. Quart. Press, W. W. Norton and Company, Inc.

384. Friedman, J. H., Kastlin, G. J., and Kooperstein, S. I.: The Psychosomatic Factors in Pulmonary Tuberculosis. A Study of One Hundred Consecutive Army Cases, J. Am. Coll. Chest Phys. **12**: 6, 1946.

385. Harnik, E. S.: One Component of Fear of Death in Early Infancy, Internat. J. Psycho-Analysis **11**: 485-491, 1930.

386. Hartz, J.: Tuberculosis and Personality Conflicts, Psychosom. Med. **6**: 17-22, 1944.

387. Ishigami, T.: The Influence of Psychic States on the Progress of Pulmonary Tuberculosis, Am. Rev. Tuberc. **2**: 40, 1918-1919.

388. Jelliffe, S. E., and Evans, E.: Psychotheraphy and Tuberculosis, Am. Rev. Tuberc. 3: 163, 1919-1920.

389. Kubie, L.

390. Merrill, B. R.: Some Psychosomatic Aspects of Pulmonary Tuberculosis. Part I: A Review of the Literature. In preparation.

391. Roheim, G.: Das Selbst, Imago 7: 1-39, 142-179, 310-348, 453-504, 1921.

Chapter XI

392. Benedek, R., and Rubinstein, B.: The Sexual Cycle in Women—the Relation Between Ovarian Function and Psychodynamic Processes, Psychosom. Med. 3: 122, 1941.

393. Bergler, E.: Short Genetic Survey of Psychic Impotence, Psychiatric Quart. 19: 412-437, 1945.

394. ————, and Hitschmann, E.: Frigidity in Women, Nerv. & Ment. Dis. Monog., Washington and New York, 1936.

395. Bergler, E.: Die Psychische Impotenz des Mamies, Berne, 1937, Huber.

396. Blyth, W.: Pseudocyesis Simulated in Male, Brit. M. J. 2: 137, 1943.

397. Bogard, W.: Causes of Enuresis in Armed Forces, Müenchen. med. Wchsnchr. 89: 488, 1942.

398. Brickman, J.: Index Psychoanalyticus, 1893-1926, London, 1928, Hogarth Press.

399. Despert, J. L.: Urinary Control and Enuresis, Psychosom. Med. 6: 294-307, 1944.

3. Dunbar, F.: Emotions and Bodily Changes, ed. 2, New York, 1938, Columbia University Press.

400A. Friedel, H.: You Can be Thin, 1948, N. Y. Caxton House, Inc.

400. ————, and Squier, R.: Emotional Factors in Course of Pregnancy, Psychosom. Med. 8: 161-175, 1946.

401. Gill, M. M.: Functional Disturbances of Menstruation, Bull. Menninger Clin. 7: 6-14, 1943.

402. Goldman, G. S., and Bergman, M. S.: Psychiatric and Rorschach Study of Adult Male Enuresis, Am. J. Orthopsychiat. 15: 160-166, 1945.

403. Huschka, M.: A Study of Training in Voluntary Control of Urination in a Group of Problem Children. Psychosom. Med. 5: 254, 1943.

404. Huschka, M., and McKnight, W. K.: Psychiatric Observations in a Well-Baby Clinic, Psychosom. Med. 5: 42-50, 1943.

405. Knight, R. P.: Functional Disturbance in Sexual Life, Bull. Menninger Clin. 7: 1945.

406. Kosmak, G. W.: Psychosomatic Aspects of Gynecology and Obstetrics, New York State J. Med. **45**: 2298-2304, 1945.

407. Kroger, W. S., and Freed, S. C.: Psychosomatic Treatment of Functional Dysmenorrhea by Hypnosis; Preliminary Report, Am. J. Obst. & Gynec. **46**: 817-822, 1943.

408. Marwil, T. B.: Functional Amenorrhea in WAVES, U. S. Nav. M. Bull., **44**: 569-573, 1944.

409. Menninger, K.: Man Against Himself, New York, 1938, Harcourt, Brace and Company, Inc.

410. Emotional Factors in Organic Gynecological Conditions, Bull. Menninger Clin. **7**: 47-55, 1943.

411. Mohr, F.: Psycho-physische Behandlungsmethoden, Leipzig, 1925, Hirzel.

412. Noro, N.: Ueber das Stadium Nervosum der Cystitis, Klin. Wchnschr. **46**: 1485, 1933.

413. Novak, J., and Harnik, M.: Die psychogene Entstehung der Menstrualkolik und deren Behandlung, Ztschr. f. Geburtsh. u. Gynäk. **96**, 239-296, 1929.

414. Orr, D. W.: Pregnancy Following Decision to Adopt, Psychosom. Med. **3**: 441-446, 1941.

415. Rado, S.: Fear of Castration in Women, Psychoanalyt. Quart. **2**: 425-475, 1933.

416. Ritch, C. O.: Urologic Neurosis and Psychoses, Illinois M. J. **89**: 131-132, 1946.

417. Rosenzweig, S.: Psychology of Menstrual Cycle, J. Clin. Endocrinol. **3**: 296-300, 1943.

418. Salerno, E. V.: Psychogenic Factors in Gynecology and Obstetrics: Spontaneous Emotional Abortion, Rev. Assoc. Med. Argent. **60**: 109-112, 1946.

419. Sher, N.: Causes of Delayed Menstruation and its Treatment, Brit. M. J. **1**: 347, 1940.

420. Shlionsky, H., and others: Functional Enuresis in the Army; Report of Clinical Study of 100 Cases, War Med. **7**: 297-303, 1945.

421. Steinberg, A., and others: Psychoendocrine Relationships in Pseudocyesis, Psychosom. Med. **8**: 176-179, 1946.

422. Wengraf, F.: Psychodynamic and Therapeutic Aspects of Functional Dysmenorrhea, Am. J. Obst. & Gynec. **48**: 475-488, 1944.

423. Wittkower, E., and Wilson, A. T. M.: Dysmenorrhoea and Sterility; Personality Studies, Brit. M. J. **2**: 586-590, 1940.

Chapter XII

424. Despert, J. L.: Emotional Factors in Some Young Children's Colds, M. Clin. North America **28**: 603-614, 1944.

425. Dieuaide, F. R.: Tropical Diseases and Geopathology, Science **102**: 656-658, 1945.

426. Emerson, C. P.: The Importance of the Emotions in the Etiology and Prognosis of Disease, Bull. N. Y. Acad. Med. **5**: 985-1004, 1929.

427. Evans, A. C.: Chronic Brucellosis, J. A. M. A. **103**: 665-667, 1934.

428. Griggs, J. F.: Chronic Brucellosis; Diagnostic Points Noted in 100 Cases, California & West. Med. **58**: 118-125, 1943.

429. Harris, H. J.: Brucellosis; A Case Report Illustrating Psychosomatic Problem, Psychosom. Med. **6**: 334-335, 1944.

430. Horn, W. S.: Chronic Brucellosis as Major Cause of Neurasthenia, J. Kansas M. Soc. **40**: 498-504, 1939.

431. Lindemann, E.: Symptomatology and Management of Acute Grief, Am. J. Psychiat. **101**: 141-148, 1944.

432. Saul, L. J.: Psychogenic Factors in Etiology of Common Cold and Related Symptoms, Internat. Psychoanalysis **19**: 451-470, 1938.

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